

TECHNICAL DEPT.

# AVIATION

*The Oldest American Aeronautical Magazine*

JANUARY 2, 1928

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PRICE 20 CENTS



Flying boat racing the "Yankee Doodle" at the National Motor Boat Races, Baltimore, Md.

VOLUME  
XXIV

## Special Features

NUMBER  
1

And What of 1928?  
Looking Back at 1927  
1927 Commercial Production

AVIATION PUBLISHING CORPORATION

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# P E R F O R M A N C E...



**A** NEW MEANING of performance is shown in the Wasp-powered "All-Purpose" Fairchild Mailplane.

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out re-study and scrutiny and an exhaustive search for something better, even though the margin of the particular improvement achieved may seem in itself insignificant.

Out of this research notable and far-reaching advances in the art of aeronautics are taking form.



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OUR Aviation Manual, its contents recently revised, has been sent to many aviation enthusiasts in the middle west. Everyone who has seen a copy, comments upon the thorough manner in which the booklet covers its subject.

The Aviation Manual contains descriptions of many types of airplanes and airplane engines. Qualities essential to fuels and lubricating oils suitable for aviation purposes are discussed at length. Also included in the booklet are valuable maps, showing air routes and landing fields.

A copy of this booklet will be sent free upon request to persons interested in aviation. Nearly every phase of this most modern means of transportation is completely discussed. And in addition, the Aviation Manual tells why

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Our chemists and practical service men will continue to work in close cooperation with the research departments of army and navy aviation units and many aircraft manufacturers. No Berry formula will ever be changed except for better. We will continue to serve aviation faithfully and well, from the belief that the industry will soon take its place as a leader.

We will be glad to send responsible people our booklet, "Specifications for Aircraft Finishing," now in its second edition, revised and enlarged. Write for it—a brief note will do.

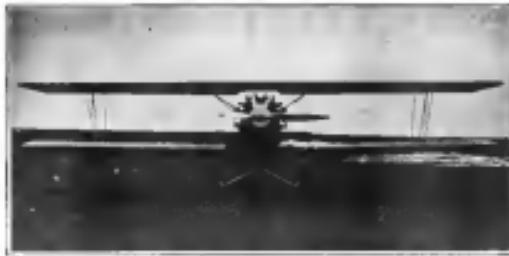


*On the Wings of Progress*

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Commerce

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*The  
Consolidated  
"Courier"*

*A Proven,  
Developed  
Airplane*



A SPECIAL convertible type, using the Wright Whirlwind engine, designed to provide the following: complete dual control for training and practice flying, passenger carrying, stunts of every sort, cross-country flying (with remarkable ability to get in and out of small fields), gunnery practice both fixed and flexible, observation missions with radio. These conditions may be had either as a landplane or as a single float seaplane. Cockpits are very roomy and comfortable, with a large baggage compartment. Controls and insulation in both cockpits are so arranged that either may be made quite clear for any desired purpose.

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*The Consolidated "Husky"*

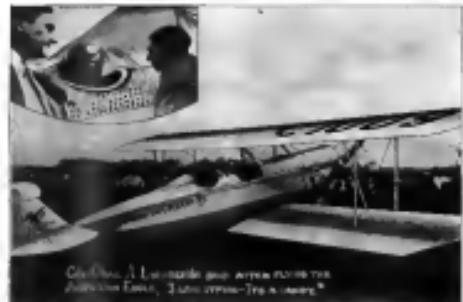


*The Consolidated Husky, Designed and Constructed by Consolidated Aircraft Corporation.*

**CONSOLIDATED AIRCRAFT CORPORATION**  
BUFFALO, NEW YORK

# "I Like It Fine, It's A Dandy"

COLONEL CHARLES A. LINDBERGH



*Col. Charles A. Lindbergh and American Eagle*

Burnished  
Aluminum  
Motor  
and  
Cockpit  
Covering  
and  
Streamline  
Head Rest  
No  
Extra  
Charge

The above picture was taken August 18th, 1931 at Kansas City Airport just after Col. Lindbergh completed a flight in an American Eagle.

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A proven developed airplane, fast and steady airspeed, with take-off and landing qualities of a high class, great maneuverability. Powered with OXX, 30 H. P. engine, maximum, develops a speed of 120-6 m.p.h. and is capable of reaching an altitude of 1200 feet in two minutes and five seconds.

At the American Day races held at the Kansas City Airport, the American Eagle won every event against a field of experts, in which every make of new production plane with any engine of that type was represented. The American Eagle also set high speeds in performance contests.

Manufactured under Approved Type Certificate No. 17, the construction throughout is the best. There has never been a commercial failure with an American Eagle.

Enclosed routes are rapidly being closed in every section of the country. Territory is now available in fewer than ten states. Knowing what a solid roadside there was last year, to get information on the American Eagle is going to BUY NOW. If you are contemplating a distribution network for this type plane, we suggest you come to a discussion at an early date.

With OXX Motor, Hennell Propeller, Dual Controls  
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Corporation*

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## THE TREND OF AMERICAN AVIATION



Latest Fanchon-Cabot Monoplane (Wasp Engine)

## The "Wasp" and the Cabin Plane

IT is significant that the Royal Canadian Air Force has selected the "Wasp" equipped Fokker for their difficult photographic service in the Dominions. The relatively light but powerful 400 hp. "Wasp" provides the quick take-off and climb as well as the high speed which is necessary to meet their requirements.

The Canadian Transcontinental Airways, Ltd. also will employ similar equipment on their air mail route. American aircooled radial engines are becoming synonymous with commercial aviation in America. In Naval and Military ships, as well as in the air mail and other commercial services, the Pratt & Whitney "Wasp" is doing its share to improve the breed.



THE  
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HARTFORD CONNECTICUT

DEPENDABLE ENGINES

## THE TREND OF AMERICAN AVIATION



The Wasp in a Fokker Super-Universal

## The "Wasp" and the Cabin Plane

WHERE increased performance is desired Fokker now has available the Super-Universal, "Wasp" equipped. A new standard of performance has been set up.

The "Wasp" has proved itself in the Navy single and two-seat fighting planes, and in the Amphibian observation types. The Super-Universal is just another indication that commercial aviation is quick to take advantage of improved types of engines.



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DEPENDABLE ENGINES



# I 928

A YEAR ago who would have dared to predict such feats as were actually accomplished in 1927 by American aviators? Who would have imagined the overwhelming public interest these feats aroused? Who could have foreseen the tremendous impetus given to American commercial aviation?

Landing fields have sprung up all over the country. Cities and towns have fought to be on the line of newly established airways. Government and private flying schools have been inundated with requests for flight instruction. Factories have waiting lists of customers for planes.

Greatest of all—the rank and file of America is becoming air-minded!

How shall we use this rich legacy of 1927? How can it be employed to the greatest advantage of commercial aviation in 1928? It is well worth while to give this serious thought.

Let us show the public such a record of safety as will convince the most timid.

Let us show such progress in the practical application of flight to the needs of the business world that American business will think of the airplane in the same terms it now thinks of trains, ships and motor trucks.

Let us give every encouragement to the pioneer whose aims are the advancement of aviation. But let us discourage reckless publicity seeking.

Let us do all everything in our power to further the cause of American aviation, knowing that each will benefit from anything which benefits the whole industry.

Let us make 1928 show an even greater advance over 1927, than 1927 showed over any year preceding.

The Stone Metal Airplane Company  
Division of FORD MOTOR COMPANY  
Dearborn, Michigan



The Oldest American Aeronautical Magazine

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No. 1

## 1928 -- Aerial New Year

TO EXPRESS the wish that 1928 will be an aerial year is but to say that it will be a happy one as well for those who are engaged in aeronautical work. It is, therefore, the wish of *AVIATION* that each one of its readers may enjoy an Aerial New Year.

Every sign points in the direction of prosperity and advancement. And what is even more important happiness and courageous optimism pervade the whole aeronautical world. With such a spirit the aeronautical industry enters the closest period of the first quarter century.

Next December the Twenty Fifth Anniversary of the first flight of the Wright Brothers will be celebrated. The world will do homage to American inventive genius as represented by the creation of a new art. By then the aerial harvest of the year will be in. The word of *AVIATION* for all its readers is that they may gather their share of success to the fullest. Welcome to 1928!

## The Engine Situation

AS EVERYONE knows the development of aerial navigation has already been due almost entirely to the stock of war surplus Curtiss OX5 engines which enabled manufacturers to equip their planes with extremely cheap but reliable engines. These engines have started for as low as \$350 and in large quantities there were certain sales for less than one hundred dollars. At the present time these engines are being held for prices of \$1000 with the expectation that they will shortly go higher. An exact census of the stock on hand is not available but various people who should know estimate the stock in the hands of the larger manufacturers as between six and eight hundred while the number of new OX5 engines in the hands of smaller manufacturers and others in parts are not work out satisfactorily manageable. There are also very considerable stocks of used OX5 engines and quite a few Hispano-Suiza engines most of which are being closely held.

These estimates may be wrong either one way or the other but there is no doubt that next year will see the almost complete exhaustion of war surplus engines and the substitution of modern engines which will undoubtedly be more expensive and which will have an increase in the price of the three smaller planes of at least fifty per cent. over present prices. This may cause a temporary check in the sale of planes but in the long run it will be highly advantageous. It should be remembered

that the *Seversky* was replaced by planes costing four or five times as much and that the better operators made more money out of the more expensive planes. The same thing will hold true if a good commercial engine of lesser power is developed. Not only will the planes equipped with these lighter engines be more efficient but the maintenance, the endurance and the reliability will be as much increased that in the long run they will be considerably cheaper to operate than the war surplus engines.

## Cross Country Flying

NON FLIEERS especially motorists are usually apt to say that aviators on cross country flights are so apt to get lost. To their mind and even to the mind of many who have flown, the earth from the air is just like a gigantic map. This is not so on clear days but after the particular piece of ground that one sees is no longer to be found in the small air map are the pieces of a big new puzzle. The day is gone when a motorist is practically at a loss in the landscape because he has not yet started down on a map and the mass of hazy detail which is viewed from an airplane. Paradoxical as it may seem, an aviator often loses his way because he sees too much and no single feature stands out in his mind. The motorist sees only the features on either side of the road and it is easier to pick out and remember individual objects. The aviator when he can not at all has with a wide vision that it takes special training to pick out special features which can be identified or remembered. It must also be remembered that in some places part of the landscape is cut off by the wings or fuselage so that the higher the plane the greater is the extent that is cut off.

The faculty of picking out and remembering features in the landscape can be developed and improved. People naturally have a natural aptitude for the things which combine with a sense of direction and logically elements almost to genius. Even the best and most experienced of pilots can get lost on cross country flights in clear weather. Poor pilots, in foggy weather, usually "sit down" in a few minutes if they are lucky enough to find one. When every hamlet and town has an airport where a plane can safely stop and ask the way the problem will not be so serious. In the mean time many towns and factories are doing a useful work by putting names and direction arrows on the roofs of buildings.

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# Looking Back at 1927

## A Resume of Airplane Activities During the Greatest Year in the History of American Aeronautics

LOOKING BACK at 1927, the four wheels in all probability will go down in the records as the greatest in the history of American aeronautics. Col. Charles A. Lindbergh's New York to Paris flight stands out unquestionably as the most spectacular first of all. It was upon that famous pilot's arrival on the other side of the Atlantic that the aeronautical world in that country first began to give serious thought to the possibilities of the airmen. And to those airmen people, engineers outside of the industry, that historic flight was perhaps the beginning of airplane manufacturing during the past year.

However, to make a complete resume of airplane endeavors, one must go back, if possible, for 1927, one has to go back further than the date of Colonel Lindbergh's flight, in fact back to April 14, to be exact.

At noon on that day Clarence D. Chamberlin and Bert Acosta landed their Balsom monoplane "Columbus" on Roosevelt Field, L. I., after having remained in the air for 21 hr., 12 min., 22 sec. This flight constituted a new world's endurance record, breaking by 5 hr., 58 min. and 26 sec the former record established by the French pilots Béchare and Landry at Etampes Charente, France, on Aug. 7-8, 1925. Chamberlin and Acosta had taken off Roosevelt Field at 8:30 Tuesday morning, April 12, with a load of 385 gal. of gasoline and 29 gal. of oil. At the take off the plane carried a total useful load of 3680 lb. The Balsom monoplane was designed by Giuseppe M. Bellanca and was powered with a Wright Whirlwind engine.

The next airplane load of note was accomplished on May 2, when the Pan American flight carrying a message of good will from Roosevelt Field to the Latin-American countries, had completed their 20,000 mi. flight of Dallas Field, Washington, D. C. The flight started Dec. 31, 1926, from San Antonio, Tex., and continued down the east coast of Mexi-

co across the Isthmus of Balboa Canal to Panama with stops at Balboa and Nicaragua. Then came the flight west to Colombia and then returned to the Central Zone and continued along the west coast of South America as far as Valparaíso, Chile, where the Andes were crossed in the Atlantic side, to Balta, Bolivia, Argentina. Following the east coast the plane flew to Buenos Aires and made a 1,496 mi. round trip up the Paraná River to Asuncion, Paraguay. Next came Brazil.



Col. Richard E. Byrd's plane "America" being prepared for its great flight across the North Atlantic.

co and Venezuela. At Ecuador the flight left the coast and made a series of loops which crossed the Iquitos, Amazon, Puerto Rio, the Dominican Republic, Hato, Coto and the return to Baltra Field, Ecuador, and Baltra Field, Washington. The London American plane "Lioness" on June 10, under the leadership of Miss Harriet A. Brougham, completed the flight, but due to bad weather at Buenos Aires, in which Capt. Charles F. Wodstry and Lt. Col. John W. Bowring were killed, was down on the ground returned to the United



The Pan-American flight plane of the Pan-American flight lined up at Dulles Field, Washington, D. C.

States. The planes that made the complete trip were the New York 2nd—Major Herbert A. Dargan and Lt. Col. E. J. Hall and his son A. E. Dargan in the Detroit Flying Club No. 5, completed the second part when they came to earth at Newberg, Wash., after covering a distance of about 2000 mi. Third became west to Guatemala and then to San Salvador, El Salvador, in the Andes Range, which comes so near at Balderas, El Salvador, after a flight of about 800 mi. The two leading contestants were selected to represent the United States in the Gordon Bennett International Balloon race which in honor of Van Gennep's victory in 1926, was held at Detroit. Captain Fifteen balloon took part in the exhibition race and finished four Army, three Navy and 8 civilian entries.

Boston to the take off for a transatlantic attempt by Chamberlin and Lindbergh in the Spirit of St. Louis, Chamberlin at Berlin on Saturday, June 4, took the audience record breaking plane "Columbus" off Roosevelt Field and started a long distance flight of 3,000 mi. Chamberlin carried Charles A. Levine as a passenger and in 45 hr. they flew from Roosevelt Field to Berlin, Germany, where they landed at midnight, Sunday, June 5, and established a new world's con-



The famous "Spirit of St. Louis" en route from Paris, France, to Brussels, Belgium.

cord for the airmen who did not return.

The next airmanship achievement, the greatest of the year, was Colonel Lindbergh's 3116 mi. non-stop flight from Roosevelt Field, L. I., to Le Bourget air field near Paris, France. This flight which was made in 33 hr. 29 min. 20 sec., at an average speed of 328 m.p.h., was started at 6:33 A. M. Friday, May 28, and was completed at 10:28 P.M. (Paris time) Saturday, May 29. No mark has been set and written of this great flight that is now a record and inspiration of study and research. However, as a matter of record the greatest journey was made in a Balsom monoplane, the "Spirit of St. Louis", powered by a Wright Whirlwind engine. At the take off of the transatlantic flight the Spirit of St. Louis lifted over three times its own weight at 3,12 times its empty weight to its mass. The empty weight of the plane without special equipment was 1,055 lb., and the gross weight was 3,036 lb.; empty but complete with instruments and special tools the plane weighed 2,150 lb. Its useful load with 90 gal. of gasoline, pilot, etc., was 3,065 lb. or 2.23 times the empty weight. The plane which was built according to A. Lindbergh's specifications was constructed in less than 4 days. Prior to its start from Roosevelt Field, Colonel Lindbergh flew the plane from Glendale to Roosevelt Field, New York, where the plane was completely checked, in a total flying time of 14 hr., 8 min. In making the flight the former air mail pilot was the flying price of \$3000 which had been offered by Raymond Orteig.

On Memorial Day Ward T. Van Gennep won the National Air Race for the third time and gained permanent possession of the Litchfield cup. Van Gennep had as his aid W.



Charles Chamberlin and Charles A. Levine shaking hands in the start of their nonstop flight to Germany.

stage, long distance record. Their ultimate goal was the city of Berlin but a shortage of gasoline forced them about the landing at Hofen. After taking on fuel Chamberlin took the Columbus into the air again, but owing to the forced landing, and going out in bad weather, a second forced landing was made on a marsh near Kettwig, Germany. Later when repairs were made the flight was continued in the German capital. The plane took off with a total of 855 gal. of gasoline.

and the total weight of the plane was approximately 5,600 lb.

On June 25, fourteen planes took off from the Ford Airport at Dearborn, Mich., to start the 1932 National Air Tour. The 3,800 mi route shown was from Dearborn to Buffalo to Geneva, Rochester, Boston, Hartford, New York City, Philadelphia and Baltimore. From that point the route doubled back across the mountains of Pennsylvania to Pittsburgh and thence to Cleveland, Indianapolis, Dayton, Columbus, Cincinnati, Louisville, Memphis, Pine Bluff, Dallas, Oklahoma City, Tulsa, Wichita and Omaha. At this point the route again went to McAlester, Oklahoma, and then to Tulsa, Oklahoma, and finally to Detroit.

The tour ended on July 19, and total weight was for a Boeing-Douglas monoplane, piloted by Eddie Stinson. Stinson's total score was 2,952. A Boeing monoplane piloted by Randolph G. Page was 2nd place with a total of 2,962.5 points, and a Mercury biplane piloted by Harvey C. Shumard was the 3rd place with a total of 2,967 points. The first and second place winning planes were powered with a single Wright Whirlwind engine and the third place winning plane was powered with a Curtiss O-6A engine. Of the 16 planes which started one was withdrawn for personal reasons while another was seriously delayed by engine trouble but it was disqualified for the prize money although it completed the tour. The regularly with which the contestants completed the 35 legs of the Tour was a wonderful demonstration of the reliability which has been achieved by modern aeroplanes and aircraft handled by experienced pilots.

The next aerial event of importance was begun shortly after 9 o'clock on Tuesday evening, June 28, when Lieuts Lester J. Maitland and Albert Hegenberger started into the air with a three engined (Wright Whirlwind) Fokker Army transport from the runway of the Oakland Municipal Airport in California and headed westward to the Hawaiian Islands with 2,400 lb of mail. On July 25 at 15 hr. 15 min. the last plane was piloted into a perfect landing on Wheeler Field, Island of Oahu, Hawaii. Thus did the first trans-oceanic flight of the American mainland and the Hawaiian Islands successfully concluded by air, and added further to the establishment of a new world's record for non-stop distance flying over open water. The runway at Goldfield Field is stated to be 7,000 ft long, and according to official Army observations the distance was taken to the city of Perth where they re-

ached 6,000 ft. Lieutenant Maitland landed the plane at over the Golden Gate as soon as he had left the ground, and after the mail had been passed out of view no land was sighted.

When they had sighted land it proved to be in Island of Hawaii, and the two fliers were the first to cross the ocean which they "crossed."

While the Fokker Army transport plane was wagging away across the Pacific stretch, another three engined (Wright Whirlwind) Fokker monoplane, "The America," commanded by Comdr Richard E. Byrd, took off from Roosevelt Field



First air plane "Wichita" piloted by Eddie Stinson from California to Mexico.

labeled non-stop to La Guardia Air Field. The date and time of the exact take-off was 3:34 A.M., June 29, and at 20:30 A.M. (French time) July 10 the plane was landed in the sea some 200 yd from shore near Yerres-Montrouge, France. An accompanying Commander Byrd was the Army pilot; Lieut Gen. C. Noyelle, flight commander, and Capt Ernest P. Bell, pilot of "The America" had an opportunity to cross the Atlantic in a boat at La Guardia, but after being in the air for over 48 hr. 15 of which were spent in fog out of sight of land or water, and the last 8 being spent groping blindly through solid darkness over French soil and in the search of a suitable place to land, they reluctantly ended their trans-Atlantic flight on the waters off the French coast, and then made their way to shore by means of a rubber life raft. After spending the night as the guests of the city of Paris the survivors were then taken to the city of Perpignan where they re-

and what little medical attention as was necessary after a several arduous.

The take off from Roosevelt Field which was made by the two men perfect and sounding the weights of the four men total load of the plane who weigh less than 7 tons or close

field to make an exact duplication of the Army flight.

The take off from Goldfield was delayed for three hours due to fog and a false start when the plane hit a rock. Fog was also encountered for almost the entire trip, and the first land sighted after leaving the American mainland was the peak of Mount Iao on the Island of Hawaii. Altering their course the fliers headed for Oahu and Wheeler Field but the fog gave out at Makaha. The landing was made in the trees at the stern considered it less dangerous than to try to land in the canopy. The plane was damaged beyond all hope of repair, and only the engine and instruments could be salvaged.

On July 26, after having released its ten airmen passengers who had returned the high altitude of the mountains, Captains Bell and Byrd, accompanied by Capt. Charles A. Lockberg left New York for a non-stop tour in the Spirit of St. Louis of the 50 states of the Union. The tour which was conducted under the auspices of the Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., was completed with Capt. Lockberg's return to New York City on Oct. 23. On the tour he was accompanied by a Fairchild color cinematograph belonging to the Department of Commerce and piloted by Capt. Philip Lowe. The total distance of the tour was 29,350 mi. and the total number of hours spent in the air was 208. During the tour 53 state capitals were visited, a total number of



Lieuts Lester J. Maitland and Albert Hegenberger (left) and Captain Richard E. Byrd who flew non-stop from California to Mexico.

55,000 ft, most of which was ascended far by the 13,000 gal of gasoline in the tanks. The plane took 45 sec. to run the 2,000 ft before it got into the air. In a full load test it had made a take off in 21 sec., but this time Aeromex had delayed the plane to carry itself onto the air. The landing in the water was made by Bertie Baldwin, who had since time before selected Aeromex as the controls. Commander Byrd was the last to leave the plane and he took with him the small east part of the Fokker Blue flag which he was to present to President Delmire of France, and as many of the charts and instruments as he could remove.

On July 4, Lieut C. C. Chapman, Jr., U.S.N., established a new world's record for altitude, when he reached a height of 37,000 ft. in a Navy "Aquila" shipboard fighter equipped with a Pratt & Whitney "Wasp" engine. A very superlative record by the N.A.C.A. at the experimental station Langley Field, Va., was made in connection with the Wasp engine. In the search of December 1931 announcement had made by the Federation Aeronautique Internationale that the world's altitude record for seaplanes had been awarded to Lieutenant Chapman. This record of 36,474 ft. was made by Lieutenant Chapman on July 25, 1931, and was designated as the official altitude record when the F.A.I. revised the name of Calidus, the French pilot, from its 31,111 ft.

For more flying hours forced to abandon an attempt to cross California to Hawaii, Ernest L. Smith and Ernest P. Bell took off from Goldfield Airport, Gold, at 16:45 (Pacific time) Thursday, July 11, in a single Wright 300-hp engined Travel Air monoplane and headed out over California en route for Wheeler Field, Hawaii, where Capt. Richard J. Hegenberger and Lieut Maitland, Goldfield. However, after 25 hr. 26 min. the fliers were forced to land in the town of the Island of Maui, 30 mi. east of Goldfield Field and 23,000 ft from their starting point. This marked the second successful crossing of the Pacific and had not been for the complete exhaustion of fuel supply which necessitated the forced landing. Capt. Ernest would undoubtedly have earned an to Wheeler



Captains Charles A. Lockberg and Richard E. Byrd, the two airmen who completed the non-stop tour of the 50 states of the Union in the Spirit of St. Louis.



Lieut C. C. Chapman, Jr., U.S.N., rising in his Navy "Aquila" ("Wasp" equipped) after establishing the World altitude record of 37,000 ft.

13 touch stops were made, a total number of 40 long stops were made and on only one occasion was the New York plane late in arriving at a designated point. It was estimated that over 20,000,000 people saw the plane and during the tour both planes performed perfectly, there were no overheads, no forced landings and no delays of any kind from mechanical difficulties. The Spirit of St. Louis was powered

(Cont. on page 20)

# And What of 1928?

## Continued Development of All Phases of Aviation, Particularly Airports and Engines Will Make for Year of Prosperity

FROM WHATEVER angle we look at it, 1927 has been a banner year for aviation in America. The small motor, propeller airplane has shown a most healthy growth and has proved itself, under proper conditions and management, an acceptable means of air transportation. Air mail service operators and dealers in aircraft have done a hand off business. Manufacturers of commercial planes were so far wrong in their last winter's estimates of production that they have had a hectic and hard working year catching up in the demand, but somehow no one seems to feel sorry for them. Last, but not least, the manu-

facturers have had an opportunity of advertising. The new field built in 1927 will have their effect on the air mail demand for 1928 in 1928.

Although the long run flying would have established itself through safety considerations there is little doubt but that the sportscaster flights of 1926 have given them the impetus which has no little influence in the establishment of any new industry as needed of transportation. The public of 1927 can not remain at as high a pitch during 1928, but there is every reason to believe an increase in aviation will continue in 1928. The public at large has generally acquired some knowledge of flying and the flying enthusiast will perhaps have to spend less time in answering absolutely elemental questions. Flying as an artful hearing and meaning to many more people on Jan. 1, 1928, than it did on Jan. 1, 1927, and there is bound to be a wider application of its advantages.

The movements have shown no popularity during 1927 which would warrant the demand for strength. The first with the foundation of flying clubs who use planes and is with the members who have the advantages of pleasure component but still not the flying at exceedingly low rates. These clubs did not functionally fly as flying clubs and associations of previous years in that they are probably designed to give members an opportunity to fly members and under pleasure circumstances. In England such clubs have greatly stimulated private flying and it is hoped that the clubs also will have the same effect here in 1928.

The second movement is the great extension of the building of model airplanes and gliders which has been carried on



Postmaster General (right) of San Francisco inspecting a B. E.2a, president of British Aeroplane as official air mail carrier at San Francisco, July 1, 1927.

dimensions of military aircraft have received large orders and what is more important the orders have been given out as a stimulus which has tended to stimulate the industry.

But what of 1928? Will there be another Lindbergh boom or will aviation wing its way to the front through a less uncertain progression? These questions may be answerable by the dead but those of us who are alive will have to wait for the passing of another 365 days. There are however certain factors in the situation which developed during 1927 and which are bound to affect the situation during 1928.

Through out 1928, one of the most important factors is the development of airports which has been going on at a very rapid rate throughout the past. Standard towns which in 1926 had no airports have fields and landing strips. Not only will these encourage local flying and promote an increase in the demand for planes and pilots, but it will make cross country flying easier and convenient. Every airport developed during 1927 will create a demand for new planes and the planes already in service will have a greater usefulness as there are more planes that can be landed at.

The knowledge that there are landing fields along the routes which never can be created and at which necessary landings can be made will be a great encouragement to those who are contemplating cross country flights. Landing fields will have the same effect on air traffic as good roads and



Front quarter view of the Ireland "Vapour" showing the resulting improvements of the propeller.

by the various long distance throughout the United States. The effect of these may not be manifested in 1928 but it certainly will have an influence on future years when the boys grow up.

The correspondingly large demand for planes in 1927 caused all established manufacturers to expand their facilities, and it brought out a whole crop of new interests in the field. The new firms here had a hard struggle for though they could

sell their planes as fast as they could produce them their lack of experience prevented them from living up to the standards which they have laid out. Also many of the newer planes had not been tested thoroughly enough and often their design was at fault and in the rush to produce planes they overlooked many details which only would bring to light. Though the older manufacturers refined these same troubles they were offered to a lesser degree and as far as one can see the experienced manufacturers were in



Action photo of a White 1B powered with a Flexibility Canis-rot engine.

a stronger position at the end of 1927 than at the beginning. This is especially true among the manufacturers of planes but OX-5 engines which had had several years of experience in manufacturing.

The year of 1927 taught existing manufacturers how to produce commercial planes in considerable quantities and it also brought the situation of financial interests in the fact that there was a considerable demand for planes. Raising money in 1928 will find it easier to raise money for expansion but it would not be surprising if 1928 brought several automobile manufacturers or other large concerns into the aviation field. It is almost certain too that several concerns which have been manufacturingobby planes suddenly will turn their attention to the construction of new serial planes.

The other serious problem facing the manufacturers of commercial aircraft is the engine question. The demand during 1927 went up the stock of low powered war surplus engines made more quickly than had been expected and there is little doubt that before the end of next year the supply will be exhausted. The change from the cheap war surplus engines to modern engines will require a complete readjustment in the low power class, and it will require good planning and quick action to ward off the vibration. It is probable that the engine situation in 1928 will be determined by the purchase of planes but by 1929 the situation should be stabilized and very much improved. As the new engines are built out we shall see new planes designed around them. There will probably be three and four motor water cooled planes for the type which is most likely to come to the front in the 100-120 h.p. advance models of which have appeared in 1927. When the stock of war surplus engines is used up planes for 400-500 h.p. bases on the basis of their horsepower and the all purpose plane will give way to one which will be a special type.

There are at least a dozen groups which are planning to have an commercial engine during 1928 and several of these have received cross-country testing. If these are successful that is certain about 1928 it is that there will be great

developments in the manufacture of commercial engines. There is another development which has been initiated as 1927 but which will almost certainly take a prominent place in 1928 and that is the manufacture of commercial flying boats. This field has been practically dormant since the war and until 1927 practically all operators flying in that country can be said to have seaplane boats. In 1926 a few commercial flying boats were built and in 1927 the number increased to about forty or fifty. The demand for commercial seaplanes there is also a demand for flying boats most amphibious. Two concern have started out amphibious flying boats during 1927 and there is little doubt but that 1928 will see several more enter the field and as an appreciable production.

The turning over of the transcontinental air mail to private operators in 1927 and the extension of the Federal air mail system brought about an enormous development, which should continue on in 1928. The operating expenses gathered in 1927 will help the companies to do better financially in 1928. Besides, the further extension of the air mail routes will bring a larger volume of business. The public has already shown its willingness to pay enough extra postage to make the air mail profitable and there is every reason to believe that the air mail will continue to grow and prosper in 1928. It is almost certain too that the year will see an appropriation by Congress and the next year by the Post Office to enlarge considerably Central and South America. This would be the first step of a development which might prove even more important than our inland air mail. Several passenger lines are being proposed for 1928 and these developments seem to be especially active on the West Coast. Although passenger transportation in the United States has not proved a success but it must be admitted that with a few exceptions the Americans have not been exposed to modern flight circumstances and it may be that 1928 will develop a passenger line which will run the way and which can continue without subsidy.

From the technical standpoint the operation of air lines in 1927 has been a period of remarkable experience either



A Krajcik "Paddy" (a White 1B) in flight over the West Indian Aerial Express.

there was, or which started progress, are still. There has been no improvement in the aerodynamics of the aircraft but the wide use of modern radial engines has brought about an even greater and more rapid development. During 1927 several new and advanced closed outer metal shells with the idea of improving performance but on the whole these improvements have not met with qualified success, and there seems to be a tendency in return to the open cockpit plane, especially for mail flying. The most disconcerting feature of 1927 was the fact that there was little improvement in the

regularity of operation. Although the public has shown that it would patronize the air mail even with its present irregularity it is disappointing not to find more progress. On the other hand there has been a great amount of research going on in lighting, weather forecasting, development of wireless and its instruments, especially altimeters. It is hoped that this research will bear fruit and that 1928 will see the inauguration of blind flying as part of the regular schedule of operations.

#### No Lighter-Than-air Developments

As far as this country is concerned next year will not bring any definite developments into the field of lighter-than-air craft. Last year's large European dirigible will be held in high regard, and our own large ships should be well in service, and the small metal dirigible may be completed by the end of the year.

From the technical viewpoint, 1927 does not seem to have brought out much which we have a vital influence on the development of airplane design in 1928. The one exception is the development of the Hispano-Suiza 11B, which, if reports be true, has now been pertinent to the point where in practice it will do three things which it can do in theory and is the word limit. It is to be hoped, in 1928 will see a very marked improvement in the safety and efficiency of aircraft. 1928 will undoubtedly bring out a few serious competitors for the Schneider Trophy Competitions, and even if only par-



A Boeing 30 parked with a Stevens-Mitchell aerial cylinder engine.

tical success is achieved, the year will mark considerable technical progress in the study of a very difficult problem.

As has been stated before 1928 may be profitably spent on research, development by some means, advancement or new invention but even with such an unexpected interruption as took place in 1927 we may expect a progressive and progressive year during 1928. New aeroports will create a demand for planes and the volume of business should bring prosperity to the manufacturers. The demand for new conventional engines will create what amounts to a new and large branch of the aeronautic industry.

"It is gratifying to note the increasing strength and diversified management of the Aeronautical Chamber of Commerce which has done very greatly for the interests of the industry.

"We hope 1928 will well reward confidence that the industry will merit the public demand that America may continue to be 'First in the Air'."

#### Industrial Survey Planned to Increase Air Transportation

THE POSTAL Service Committee of the Chamber of Commerce, of Oklahoma City, Okla. is planning a survey of Oklahoma City industry to find ways in which shipping may save time and effort in the use of air transportation, O. H. Dale, chairman, has announced. Freight deliveries, transportation, comparative transportation rates, and the possibility of increasing the mail order business of department stores are a few of the points to be considered.

#### The Outlook for 1928

A statement by Paul E. Knapp, vice-president, Curtis Aeroplane Co., Worcester.

WE STAND at the threshold of the 1928, the twenty-ninth anniversary of the birth of aviation.

"Looking back, we are like the year 1927, in all branches of aeronautical activity, in one of preparations for a great future,—but far off in its development so far could then anticipate. Military aviation was placed on a sound basis with the passage by Congress of the First Army Procurement Program, and commercial aviation was recognized by legislation establishing a Bureau of Aeronautics in the Department of Commerce.

"The 1927 showed much which we have a vital influence on the development of airplane design in 1928. The one exception is the development of the Hispano-Suiza 11B, which, if reports be true, has now been pertinent to the point where in practice it will do three things which it can do in theory and is the word limit. It is to be hoped, in 1928 will see a very marked improvement in the safety and efficiency of aircraft. 1928 will undoubtedly bring out a few serious competitors for the Schneider Trophy Competitions, and even if only par-

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#### Breeze Flying Service Formed To Operate From Mills Field

WITH VANCE Stoen, former air mail pilot, now a San

Francisco aircraft manufacturer, at its head, the Breeze Flying Service has been formed to operate from Mills Field, San Francisco's municipal airport.

Mr. Stoen has associated with him Paul Shepard, Joseph Lounsbury and several others, mostly San Francisco business men. A \$15,000 corporation is being formed to manage the service.

The service has obtained the agency for the Waco plane, Miss Mabel and Santa Clara aviation, California. Miss Mabel is located in the former. One Waco has been already delivered, a second is expected next and three others are being ordered.

The activities to be carried on at first will include only a flying school and passenger-carrying service at the field, with a taxi service to be added later. Beside the Waco, the new fleet intends to operate two or more Burrey Monoplanes. A laboratory lab of students has been erected and other will be prints soon totaling thousands daily.

For the present, Mr. Stoen himself and Mr. Shepard, who is an old-time maritime pilot, will handle the instruction work. A pilot and a mechanic are maintained throughout the day at the field and with arrival of the new monoplanes from the Breeze factory, 24 hour service will be provided. This is made possible by the fact that the field is approximately 10 miles from the San Francisco airport and the Breeze factory.

"Two pilots are kept on reserve, day and night. Headquarters of the service will be at the Breeze factory, 273 Seventh Street, San Francisco, with active headquarters at Mills Field.

station. This choice was made largely because of the good lighting at the Long Beach Field, facilitating night landings. The last steps are also to be established at Long Beach shortly.

Of his test flight north and return, Mr. Stoen said:

"The splendid speed record made by one plane—an average of better than 200 m.p.h. for the entire distance with a comfortable load of passengers—demonstrates that a regular four hour daily service can be maintained with ease. Our inspection trip to San Francisco and Oakland proved, too, that the facilities are very superior there."

"But these northern cities have splendidly developed fields. Their provision for weather reports and other essentials to



Two Ford-Stout planes used by Maddox Air Lines of Rogers Airport, Los Angeles, Calif.

the commercial aviation corporation are unquestionably the best in the world. The prospects for capacity passenger loads between the north and southern California appear to be excellent."

"Please, very shortly, as soon as another Ford plane arrives, our planes will be flying regularly from San Francisco Bay to San Diego via Los Angeles and soon thereafter all the way through to El Paso. We shall have at least half a dozen 12-passenger, all metal planes in operation within, I believe, a very short time."

#### Maddox Air Lines, Inc., to Operate Ford Plane on L.A.-S.F. Route

FORMAL ANNOUNCEMENT of a new passenger air line between Los Angeles and the San Francisco bay region, was made recently by Jack Maddox, president of Maddox Air Lines, Inc., Los Angeles, Calif. Ford aircraft two-engined planes are to be used. They have a capacity of 12 persons.

The announcement followed completion of a successful test trip in one of the new planes over the route between Los Angeles and San Francisco, and Oakland, twelve passengers being carried over the 420 mi. in 3 hr 25 min.

Mr. Maddox delayed announcement of the point at which the new line will begin its itinerary.

"We will probably have stops at both Oakland and San Francisco," he said.

An Oakland's field is actually nearer the center of business in San Francisco than San Francisco's own airport of the Japantown San Fran. Bay Inn made by boat direct from Oakland Municipal Airport. Oakland aviation enthusiasts are hopeful. Mr. Maddox will select his field as the decision for his line.

The Maddox line is already operating two planes on daily mail between Los Angeles and San Diego, with splendid performance. He anticipated equally heavy traffic on the run between the southern city and the bay region. Ultimately, he anticipates operating a line from San Francisco Bay through to El Paso, Tex., by way of Los Angeles and San Diego.

Long Beach has been selected as headquarters for the op-

#### Philadelphia Appointed to Draft Code Covering Airports

THREE PHILADELPHIANS, Mr. J. Sydney Owen, commander of the Twenty-eighth Division of the Air Service, Pennsylvania National Guard, Hollisford N. T. Fisher, chairman of the Aviation Committee, Philadelphia Chamber of Commerce, and Mrs. Charles J. Heids, former commander of the National Guard Flying unit, have been appointed by the State Aeronautics Commission to draft a code of rules to regulate airports in Pennsylvania.

#### Lieut. P. R. Love Now With the Fairchild Airplane Mfg. Corp.

LIEUT. P. R. Love, formerly with the Department of Commerce, has joined the Fairchild Airplane Mfg. Corp. Lieutenant Love will be in the sales organization of the Fairchild Company and will be a Fairchild sales representative for his sales work. It will be remembered that Lieutenant Love accompanied Colonel Lanchester on his record Good Will Tour of the U. S. in a Fairchild monoplane belonging to the Department of Commerce.

# Radio Direction Finding

An Important Item in Aircraft Navigation that Warrants Careful Consideration of Airline Operators

By LAWRENCE A. HYLAND

Radio Engineer

Article Free

**RADIO DIRECTION** finding as of such vital importance to aircraft as it is deserves the most careful consideration from the operators as far as possible. The aims of the art are to (1) direct the aircraft along a route which are observed by darkness, fog or unknown weather and (2) enable the aircraft to determine accurately the limits of the airport and effect a landing regardless of the condition of visibility.

The direction of aircraft by radio has progressed to the point where it is a practical and valuable navigational aid. Several methods have been successfully developed to accomplish the purpose each of which comes under one of three general heads:

- (1) The direction finder or radio compass.
- (2) The beacon.
- (3) The homing.

It should be stated at the outset that, as may be expected, the problems of ground direction finding installations are all present in exaggerated form in aircraft. For this reason certain of the devices which show superior performance for ship and shore work are of doubtful value in an airplane.

#### European Custom Has Services Failed

The common European practice is to have the bearing taken on an aircraft by a ground station after which the information is transmitted to the aircraft. This system has serious faults. Where the ground station takes and transmits the bearing, one aircraft can be served at a time. A sensible interval must elapse between the request for bearing and its final receipt by the pilot. At short distances these are very rapid shifts in direction due to the speed of the plane and it is frequently the case that the bearing is incorrect when the plane has moved to a bearing position. Yet no airplane requires its most accurate bearing when within twenty-five miles of its destination when the shift is most rapid. Skilled operators on the ground and in the air make the European radio bearing procedure of little value provided the plane arrives at the airport at intervals of not less than one half hour. What would arrive within a short period, however, necessarily is bound to occur. No amount of skill will permit operators to determine sufficiently the function of use of several stations, each of which is claiming for service and any one of which may receive the station of compelled to wait for its turn. This does not wait, therefore, be confined largely to methods which indicate directly to the pilot what the bearing is, the ground stations being used merely as a known reference point marking radio waves instead of light waves.

The direction finder or radio compass is a proven device

which makes use of the properties of coil antennas to increase the distance from which radio signals are being received.

Standard ship and shore direction finders of the United States make use of a single coil composed of a few turns of wire wound on a large framework. The plane of the coil is vertical. With this arrangement it is possible to get bearings with an average error of less than a degree. This standard direction finding instrument results from the fact that a coil antenna rotated about its vertical axis picks up a very low signal at 90° to the plane when the plane of the coil coincides with a bearing drawn between the transmitting station and the coil. In this position the plane is 180° apart when the transmitting station the signal disappears completely. In Fig. 1 (a) is shown a typical plot of radio compass performance at a ground station. The successive 180° dog apart are a measure of the accuracy ordinarily achieved. Such flat operation requires quiet sea-

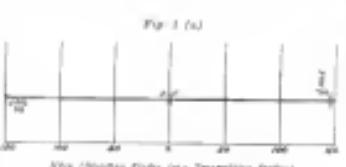


Fig. 1 (a)

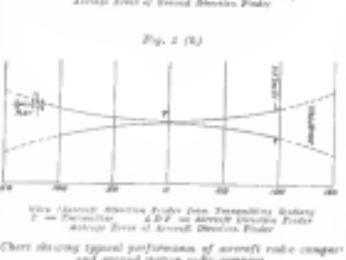


Chart showing typical performance of aircraft radio compass and ground station radio compass

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angle as well as the exact point of zero signal intensity may be located. In aircraft, however, receiving conditions are far from the best. Motor exhaust, ignition disturbance and vibration all tend to produce a high noise level. Under this handicap it is, of course, impossible to find the point at which the coil is zero. Instead the radio compass notes the point of minimum when the signal disappears below the noise level. It continues to move the coil until the signal is again heard.

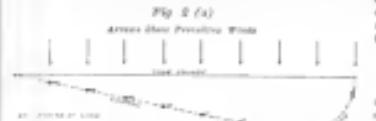


Fig. 2 (a)  
Antennae After Prevailing Wind

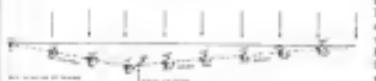


Fig. 2 (b)  
Antennae After Prevailing Wind

Effect of flying high by radio compass in a cross wind and method by which straight receive can be maintained

along that path also. The bearing, then, is the midpoint between the disappearance and reappearance of the signal. If the limits of the "exact zero" were clearly defined, it might be possible to get fairly accurate bearings at distances as much as one hundred miles. But, unfortunately, the signal and noise margin is very great so that it is difficult to judge when the noise level is in the exact center. This means the radio compass is subject to large errors at the lesser distances. At short distances where accuracy is required the radio compass is as poor with other aircraft direction finding systems. In Fig. 1 (b) is shown the bearing accuracy which may be expected from a radio compass on an aircraft.

#### Bearing Coil Compass Not Suitable

The rotating coil radio compass such as is used for ship and shore station direction finding is not suited for aircraft. To obtain a signal strength which will allow bearings to be taken over a few miles from a transmitting station, the coil dimensions must be so large as to be impracticable for rotating and bearing within an aircraft fuselage. In place of the rotating coil a large fixed coil is installed in or around the wings. The turning of the coil is accomplished by driving the aircraft aircraft through the necessary angles.

It has the further disadvantage of turning the plane in a slow and clumsy process. To avoid it another type of device has been developed, a large rotating coil mounted on a small gimbal or electronic rotating device. With the rotating element, relatively difficult and high cost involved with the inherent handicaps of any kind of coil radio compass prevent the obtain of bearing accuracy in Air Commerce.

The increasing use of metal as a structural and covering material for commercial aircraft imposes a further limitation on the use of the radio compass. All metal planes such as

the Ford and Boeing form an effective shield against radio waves. In aircraft of this type the radio compass will probably prove to be useless.

The range and hence the value of the radio compass may be increased by improving the sensitivity of the receiver. There are many faults involved in this expedient. However, control, ignition, interference, noise level and manufacturing costs are major items which must be considered in any attempt to increase the sensitivity of an aircraft receiver. In exceptional cases it might be advisable to have a special receiver, but as established strengths with other means for direction finding available it would not be preferable to resort to the means of improving radio compass performance.

#### Radio Compass Variables in Isolated Boxes

There may be situations in which no type of direction finding other than the radio compass may be used. Isolated boxes where traffic is not dense enough to warrant a homing, or regular air routes on which the beacon has not yet been installed are examples of cases in which the radio compass may prove of great worth. Where the radio compass is desired upon as the means for direction finding, pilots should be instructed to use it in conjunction with the magnetic compass. If reliance is placed on the radio compass alone there may be serious drift when the plane is flying a course across the wind. In Fig. 2 (a) is shown the effect of drift when flying high and with a transversing system objective. During a long flight and with a stiff cross wind the deviation from the course may be great as to be dangerous. The remedy is to note the magnetic compass bearing after each radio bearing. If there is a consistent drift of the magnetic compass as one direction a cross wind is indicated. The true plane should be headed "up wind" a few degrees as in Fig. 2 (b). This will mean that the "true signal" bearing by which direction is found has been changed to a local signal bearing. Operational

Fig. 2

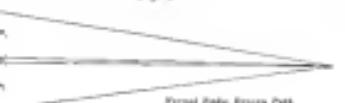


Fig. 2 (b)  
Antennae After Prevailing Wind

Fig. 3  
Bearing Coil Radio Compass Effect of a Cross Wind

The simple radio bearing range. Note the narrow path of the true course. Even the directional effect of the antenna does not disperse the width of the central path to any appreciable extent

is, however, the plane should be turned through the necessary angle to provide a radio signal of the same intensity. In this case the plane has been turned so the wind is at the correct angle to maintain the true course. Even the magnetic compass reading taken on all subsequent radio bearings will be the same as on all previous radio bearings.

The most promising of the demonstrated methods by which a commercial aircraft may be led to its destination is through



## Air Mail Pilots of America Now

## The National Pilots Association

THE OLD AVIATION, formerly known as the Air Mail

Pilots of America formed some eight years ago to protest against the Post Office Department was recently reorganized under the title of National Pilots Association with headquarters at Lakewood, Calif. The officers of the new organization are: H. M. Atkins, Lakewood, Calif., president; S. L. Bunting, Denver, Colo., vice-president and treasurer, and C. F. Bunting, Lakewood, Calif., general secretary.



Ernest M. Atkins, president of the National Pilots Association.

membership is pilots holding a Master or Transport license issued by the Department of Commerce, and (2) who are employed as pilots at a route operated on a regular schedule, (3) pilots employed by firms or individuals to serve transportation, photography, advertising or other similar business, (4) pilots employed by federal, state or municipal governments except those engaged in military activities, such as the Army, Navy or Marine Corps.

Class "A" membership shall consist of (1) pilots holding licenses issued by the Department of Commerce and who are not eligible for class "A", (2) pilots formerly employed by the Post Office Department Air Mail Service and who hold membership in "Air Mail Pilots of America."

Class "C" shall be honorary members.

All members who change their occupation will not be deprived of any of the privileges and benefits of the Association. Each application for membership in Classes "A" or "B" must be approved by the Governor of the district in which the applicant resides and by a majority of the Executive Committee, before disciplinary action will be taken. The association permits any member to nominate candidates for Honorary Membership, but a majority vote of the Executive Committee is necessary for honorary action.

The purpose of the Association is stated as: "For the advancement of the Air Mail and commercial aviation and to provide closer relationship among pilots to enable them to predict and accomplish that can best fit them at a class and service in general."

Each month a monthly bulletin is published, giving general news from the various sections of the country, Association activities, and comment on subjects relative to aviation, etc.

Fairchild Companies Are Merged  
Under One Holding Corporation

SHERMAN V. Fairchild recently announced the consolidation of all the Fairchild Companies under one holding company, the Fairchild Aviation Corp., of Delaware, with a paid-in capitalization of \$1,550,000. The subsidiary corporations are the Fairchild Astral Camera Co., Fairchild Astral Safety Co., Fairchild Flying Corp., Fairchild Aviation, Ltd., & Canada, Fairchild Camera & Optical Corp., Fairchild Airplane Manufacturing Corp., and the Compania Mexicana de Aviacion de Mexico.

Mr. Fairchild is president of the new company with Robert L. Van, Jr., as chairman of the board of directors. The other directors include Governor John H. Traskell of Connecticut, George H. Tolman, president of the Hayes Mfg. Co. & Co., and formerly vice-president of the Otis Elevator Co., George E. Hahn of Pittsburgh, Wilson Avery Lewis, an attorney, Maj. Talbot G. Freeman, formerly treasurer of the Celestial Air Transport, Ernest Baldwin, John Pauli and Harold Kunkel, who is secretary and treasurer of the Fairchild Aviation Corp.

## Fairchild Reality Corp. Organized

The same group has organized the Fairchild Reality Corp. of New York, it was announced, with a paid-in capital of \$1,000,000. The realty corporation will own the land and buildings and conduct a business less than by the aviation companies and subsidiaries. The realty company will own approximately 85 acres at Farmington Hills, Mich., adjacent to the Fairchild Aerodrome. Part of this land is to be used for manufacturing and contracts have already been let for the first such as a comprehensive building plan to the Amherst Co. of Cleveland.

These buildings, covering 200,000 sq. ft. of floor space are to be erected and the first is to be ready for occupancy by the Fairchild Camera & Optical Co. by Feb. 15, according to the plan. In designing his plane Mr. Fairchild said that the engine company would continue to manufacture the four-cylinder 125 hp. case type engine. Design has been completed for an 80 hp. four case type engine. Design has been completed for an 80 hp. four case type engine which will be in production soon and experiments are being conducted with a view to developing the present engine by adding multiple heads to 800 hp. 16 cylinder engine as an engine for large transport planes.

The manufacture of the Fairchild cabin monoplanes will be continued by the airplane company. Design is now being completed on a six place monoplane to be powered with an air-cooled engine and to be placed in production in the spring. It is understood that the company is planning to add two more types to its production line. One will be a three place cabin monoplane powered with the Fairchild Camera 125 hp. engine and the other will be a light low powered sport plane.

Titled Italian Ace to Study  
Aeronautics in This Country

IT WAS recently reported that Deputy Comptroller, Italian air force, is coming to this country to study the progress made in American aviation. Deputy Comptroller, whose full name is Count Ernesto Caviglioglio de Vittoriosa, has been entrusted with the mission by Major Ballo, Ballo's under secretary of aviation.

## 1927 Commercial Production

Total Estimated at 1653 With Advance Aircraft Co. Heading  
List of 103 Manufacturers With 454 Planes

By RICHARD M. MOORE

THERE HAS been a great deal of speculation as to the number of airplanes produced during the year of 1927. Estimates have been published, varying from 1,000 to 3,000. Of course, it is impossible to have an analysis on 1927 production complete immediately after the close of the year, so the past January has endeavored to complete an analysis of the aircraft production for the past year, a question never submitted to the industry brought some very encouraging results. As would be the case of the manufacturers have been in busy producing planes that they have not had time to submit their figures, but in those few cases the producers are estimated fairly closely. This has been possible as this small group of manufacturers have prepared new enough plans to give sufficient ground for a very reasonable estimate.

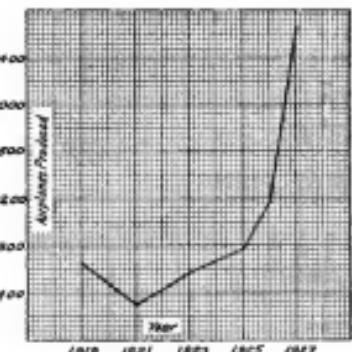
Figures have been received from all of the larger producers of commercial airplanes, and on most cases are published below. A few manufacturers stated that their figures not be published though their production is listed in the total table. From the data collected it is estimated that 1927 commercial airplanes were produced during 1927, with the industry with the total heavier-than-air production, including land and seaplane, is about 2,600.

There were 364 aircraft accepted by the Navy Department during the calendar year of 1927. The only figure available



A greater view of an Alexander Eaglerock. The Alexander aircraft Co. produced 200 seaplanes during 1927.

is the planes delivered to the Army Air Corps, which was 258, according to their fiscal year ending June 30, 1927. The figure of 200 aircraft is an estimate of 90-10 per cent of the total number of aircraft produced in 1927. According to a special survey by the Department of Commerce, 4,000 airplanes were produced during 1926 and an analysis by January, published in the issue of Jan. 31, 1927,



Curve showing yearly airplane production since 1919.

showed that of these, 400 were commercial planes. The figure of 1925 commercial planes for 1927, shows an increase of 169 per cent over the previous year. Since June 1, the production of seaplanes has increased tremendously, some manufacturers estimate that the increase has been as high as 200 per cent. When considering this figure the trans-Atlantic flights and the increase of public interest and finance seem to take into account. As some manufacturers had produced comparatively very few planes during the spring, the figure is in some cases reasonable, though in average increase of approximately 200-300 per cent is somewhat more accurate.

The Department of Commerce has received 278 applications for airplane licenses and licenses have been issued to 263 with 1915 others pending. The majority of these are in the course of inspection, compilation of data, etc. According to Ernest Jones, chief of Air Information Division, the number will be considerably reduced early in the year. The number is steadily decreasing, and the number of applications for airplane licenses is decreasing. Out of 857 applications for identification, 857 have been assigned and 50 canceled. In the Annual Report of the Department of Commerce, published in the Dec. 16, 1927, issue of *Aviation*, it was stated that there were no record with the Department



GKS engines and a smaller number with other types of low compression engines.

There has been a great demand for the 300 hp. Whirlwind engine manufactured by the Wright Aeronautical Corp., Parsons, N. Y. This company has had a very large output during the past year, the majority of which was for the military and naval use. Production facilities have been increased as fast as possible in order to meet the increased demand. The factory space has been increased and there have been many changes in the machine and assembly shops. In addition there is under construction, adjoining the present factory, a new building to be used for engine assembly and testing. It is to be ready for occupancy by April. Besides the production of Whirlwinds a number of Cyclone 325 hp. engines were built and the company is now going into production on this type.

Most of the new airplane engine development is being devoted to non-petroleum low powered engines. There are now under construction a number of large passenger planes to be powered with engines developing approximately 425 hp. W. R. Heselrode, president of the Pratt & Whitney Aircraft Co., Hartford, Conn., has discussed the situation very well in his article.

Concernable interest has been evidenced in the development of the 400 to 500 hp. air cooled radial types of engines for commercial use. This type gives reduction of probably lessening the increase of the 400 to 550 hp. water cooled engines previously in use. New types of ships for 1928 seem to indicate that the air cooled radial in the future from 300 to 600 hp. will not only dominate the commercial field but will be almost exclusively the engine equipment.

The most interesting commercial application during 1927 of the 400 hp. "Warp" engine has been in connection with air mail operations. This engine is the standard equipment of the Chicago Air Transport Company which operates between Chicago and San Francisco. The weight saving of the air cooled engine over the previous water cooled engine has provided for considerably more payload, and in addition to this, performance in all other departments has been improved, particularly with reference to maintenance and operating.

#### 1928 GKS's First AERO Service

In view of the fact it may safely be said that the trend of commercial aviation in this country is interesting, and that from a power plant standpoint it is almost exclusively divided into the air cooled radial engines.

The number of airplane engines produced in 1927 when compared with the number sold at the rate is relatively low. The majority of the engines built during the year were for military use. It is estimated that there were 1800 war surplus Gnome GKS engines put into service during the year. This does not include a smaller number of other war surplus engines. In addition there were approximately 100 European engines imported.

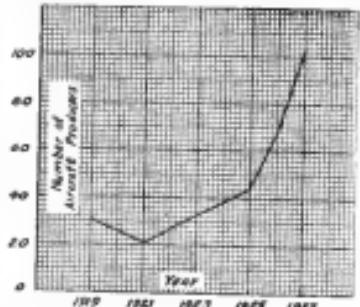
Toward the latter part of the year the lack of low powered engines began to be felt acutely. The attention of now a serious set and many manufacturers who have never before had the production of engines, find themselves beset by the lack of a suitable low powered engine to take the place of the almost saturated stock of war surplus Gnome GKS engines. It ought to be well at this time to quote W. M. Barnard, engineer of the Standard Airplane Mfg. Co., Wichita, Kans.

"The demand for the present Gnome GKS motorized airplane is far in excess of production. Within the coming year the surplus of GKS engines will have been exhausted and after this time, it seems that few new powered commercial airplanes will be longer available."

"It is my opinion, since the future promises well to be

forced to buy airplanes equipped with higher powered engines, that it will be necessary to build better airplanes having a more finished appearance and flavor of them."

"Engines, at present, are much more refined than low powered commercial airplanes. Apparently, then, the performance, mechanical details and finish must be greatly improved to be



*Curve showing increase in number of aircraft produced.*

concerned with the standards of engine manufacturers. Very rarely, with the improved appearance and standardized designs the trend toward too much complexity must surely disappear."

The completed figures for the export of aircraft exports for 1927, have not been compiled yet but it is expected that will exceed all previous years. The exports in complete, as flying engines, for the first half of 1927, exceeds the total exports for 1926. It is known that the imports received by the trans-oceanic flights last summer increased the export airplane, airplane engines and parts many times. The air plane exports for the first half of 1927 were \$111,819 as compared with a total of \$36,542 for the year of 1926.

The engine exports for the first half of 1927 were \$123,082 as compared with a total of over \$100 per cent over a similar period for 1926.

The majority of the airplanes exported this year were for Canada and the South American countries, with some to Europe and Australia.

#### Aircraft Exports from the United States

Aircraft Exports Aircraft Exports Aircraft Exports	Aircraft Exports		Aircraft Exports
	1926	1927	
All	2,000	1,000	1,000
100	4,000	2,000	2,000
200	4,000	2,000	2,000
300	4,000	2,000	2,000
400	4,000	2,000	2,000
500	4,000	2,000	2,000
600	4,000	2,000	2,000
700	4,000	2,000	2,000
800	4,000	2,000	2,000
900	4,000	2,000	2,000
1,000	4,000	2,000	2,000
1,100	4,000	2,000	2,000
1,200	4,000	2,000	2,000
1,300	4,000	2,000	2,000
1,400	4,000	2,000	2,000
1,500	4,000	2,000	2,000
1,600	4,000	2,000	2,000
1,700	4,000	2,000	2,000
1,800	4,000	2,000	2,000
1,900	4,000	2,000	2,000
2,000	4,000	2,000	2,000
2,100	4,000	2,000	2,000
2,200	4,000	2,000	2,000
2,300	4,000	2,000	2,000
2,400	4,000	2,000	2,000
2,500	4,000	2,000	2,000
2,600	4,000	2,000	2,000
2,700	4,000	2,000	2,000
2,800	4,000	2,000	2,000
2,900	4,000	2,000	2,000
3,000	4,000	2,000	2,000
3,100	4,000	2,000	2,000
3,200	4,000	2,000	2,000
3,300	4,000	2,000	2,000
3,400	4,000	2,000	2,000
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3,600	4,000	2,000	2,000
3,700	4,000	2,000	2,000
3,800	4,000	2,000	2,000
3,900	4,000	2,000	2,000
4,000	4,000	2,000	2,000
4,100	4,000	2,000	2,000
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4,800	4,000	2,000	2,000
4,900	4,000	2,000	2,000
5,000	4,000	2,000	2,000
5,100	4,000	2,000	2,000
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5,600	4,000	2,000	2,000
5,700	4,000	2,000	2,000
5,800	4,000	2,000	2,000
5,900	4,000	2,000	2,000
6,000	4,000	2,000	2,000
6,100	4,000	2,000	2,000
6,200	4,000	2,000	2,000
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6,700	4,000	2,000	2,000
6,800	4,000	2,000	2,000
6,900	4,000	2,000	2,000
7,000	4,000	2,000	2,000
7,100	4,000	2,000	2,000
7,200	4,000	2,000	2,000
7,300	4,000	2,000	2,000
7,400	4,000	2,000	2,000
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7,600	4,000	2,000	2,000
7,700	4,000	2,000	2,000
7,800	4,000	2,000	2,000
7,900	4,000	2,000	2,000
8,000	4,000	2,000	2,000
8,100	4,000	2,000	2,000
8,200	4,000	2,000	2,000
8,300	4,000	2,000	2,000
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8,700	4,000	2,000	2,000
8,800	4,000	2,000	2,000
8,900	4,000	2,000	2,000
9,000	4,000	2,000	2,000
9,100	4,000	2,000	2,000
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11,000	4,000	2,000	2,000
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11,700	4,000	2,000	2,000
11,800	4,000	2,000	2,000
11,900	4,000	2,000	2,000
12,000	4,000	2,000	2,000
12,100	4,000	2,000	2,000
12,200	4,000	2,000	2,000
12,300	4,000	2,000	2,000
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12,500	4,000	2,000	2,000
12,600	4,000	2,000	2,000
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14,600	4,000	2,000	2,000
14,700	4,000	2,000	2,000
14,800	4,000	2,000	2,000
14,900	4,000	2,000	2,000
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15,900	4,000	2,000	2,000
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16,100	4,000	2,000	2,000
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16,700	4,000	2,000	2,000
16,800	4,000	2,000	2,000
16,900	4,000	2,000	2,000
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18,900	4,000	2,000	2,000
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20,900	4,000	2,000	2,000
21,000	4,000	2,000	2,000
21,100	4,000	2,000	2,000
21,200	4,000	2,000	2,000
21,300	4,000	2,000	2,000
21,400	4,000	2,000	2,000
21,500	4,000	2,000	2,000
21,600	4,000	2,000	2,000
21,700	4,000	2,000	2,000
21,800	4,000	2,000	2,000
21,900	4,000	2,000	2,000
22,000	4,000	2,000	2,000
22,100</td			

an aeronaut at a production base, during that year 87, or 30 per cent, were monoplanes. All were of the closed cabin type with only one exception through three had open cockpits for the pilot. It is interesting to note that of the monoplanes, those produced 80 out of 100 planes, while the rest of the planes were biplanes powered with Curtiss OX-5 or surplus engines. The plane, almost without exception, was three place open cockpit cabin biplanes with a welded steel fuselage bracing and wood wings. These were 38 manufacturers producing this type, or 33 per cent of the overall manufacturers. Of the 17 manufacturers producing cabin monoplanes eleven completed their first models this year and in most cases during the latter part of the summer.

Presently all of the new commercial models are monoplanes and the general trend seems to be towards the externally



Base Aeromarine view of a Travel Air biplane. The Travel Air M-7C Co. produced 188 monoplanes during 1932.

braced closed cabin type. Of the biplanes now being produced 80 per cent have welded steel tubular fuselages and 87 per cent have wooden wings, of which nearly all are fabric covered. To the writer's knowledge there are only three manufacturers using plywood for wooden wings. There are three others employing corrugated sheet aluminum for the covering of both the fuselages and the wings, the exception being part of the tail. The above figures are taken from his table of manufacturers' specifications (elsewhere in this issue) though a few new types were completed during 1932, and are not in production. In these instances the data on that plane was not listed in the table.

There are only two manufacturers in the United States producing flying boats for commercial use and in both cases they are equipped with a float undercarriage making them amphibians. Many manufacturers are supplying problems with their planes in place of a landing gear. In most cases the landing gear can be quickly replaced converting the plane into a monoplane.

#### Data Checked and Rechecked

The data presented in the Specifications Table is believed to be accurate as possible and includes the manufacturers' own figures. It must be remembered that the performance figures can be greatly improved by a reduction in load. It is realized that there are great possibilities for success in a biplane of this sort, and for this reason the figures were submitted to both the manufacturers and by Mr. Lippisch to the American Society of Mechanical Engineers. At the table it appears in the first issue of this month it will be possible to add other new and interesting data from time to time.

To summarize the production of airplanes in the United States during 1932, there were 2323 planes produced of which 1652 were for commercial service. Of these, 1098 were powered with Curtiss OX-5 engines. Some estimate put the number of commercial planes produced at a higher figure. The Department of Commerce analysis for the first 11 months of 1932 shows a total production of 1,656, for all types of airplanes.

It is said that this figure was determined from returns from all three of the airplane manufacturers, which would indicate that these manufacturers had produced 1674 surplus aircraft in 12 months, and that the entire industry produced 51 per cent in 1932. It remains for the writer to thank the aircraft manufacturers for their cooperation in so willingly supplying the data given above.

#### Wies and Solomon to Fly South to Attempt World's Endurance Record

IT IS planned that on Jan. 5, George Wies and Lewis E. Tolman will take off in their Stearman biplane for Daytona, Fla., where they will endeavor to break the world's endurance record. The plane has been undergoing tests at Curtiss Field, L. I., N. Y., for the past few weeks and it was originally planned to try for the record from Rosedale Field, which adjoins Curtiss Field. Wies and Tolman will be accompanied on their trip south by Mr. Louis of the Tide Water Oil Co. and by Albert Stinson. It is planned to make the trip in two days stopping over night at Langley Field, Va.

The plane is a standard Stearman monoplane powered with a Wright Whirlwind engine. The wood seats in the cabin have been replaced by a large tank and all the extra equipment such as wheel brakes, etc., have been removed.

#### Worcester Aero Club Is Formed With Membership of Eighty-two

THE WORCESTER Aero Club, of Worcester, Mass., has been chartered as a branch of the American Society for the Promotion of Aviation, having an official membership of 30 before the charter was signed.

The officers of the club are: William G. Sylvester, president; Arthur DeWolfe, vice president; Eugene Dailey, recording secretary; Thomas D. Flax, financial secretary; Jeanne Dickson, correspondence secretary; Alice K. Barrett, treasurer; Walter E. Knobell, sergeant-at-arms; and Paul Bayard, photographer.

The club plans to hold regular meetings during the winter months with leaders of the aviation interests of the country as speakers. Many of the members were born during the War and others are planning to enter the course of instruction at Whetstone Field.

#### Pacific Air Transport Adds a Travel Air Plane to its Fleet

THE PACIFIC Air Transport operating the air mail, express, and passenger line from Los Angeles to Seattle has purchased a second plane to expand its present fleet of two. It is the Travel Air with Wright engine flown by Mr. J. Lippisch in winning the recent Clegg & All Derby from San Francisco to Spokane.

The plane is fast and will fit in well on the rapid California service now being maintained over the long route of alternating mountain ridges and long valleys. In a record last night by Graver Taylor, general superintendent of Pacific Air Transport, the air speed recorder showed 139 mph. at 1650 ft. m.s. The elapsed time made by Mr. Lippisch in San Francisco to Spokane Air Derby was 8 hr 25 min.



LANDING GEAR OF LOENING AIRMASTER—ARMY TYPE OAIC

AMONGST the many improvements on the Army's newest type of Airmaster, recently delivered—the OAIC—are large oversize tires which permit maneuvering on extremely soft and mucky fields.

Another step in the continued perfection of "The Plane that Does the Hard Work for America."

CO3

LOENING AERONAUTICAL ENGINEERING CORPORATION  
31st STREET AND EAST RIVER, NEW YORK CITY

MANUFACTURERS' SPECIFICATIONS ON AMERICAN COMMERCIAL AIRPLANES AND SEAPLANES AS COMPILED BY AVIATION

THE TABLE BELOW IS BELIEVED TO BE ACCURATE BUT ANGUS DINES NOT ASSUME RESPONSIBILITY FOR THE FIGURES GIVEN.

1997, all are basic phases taken under identical conditions.

- Closed
- Open
- Pending
- Incomplete
- Active
- Suspended
- Expired

五、政治和文化

第10章

Plan — 2 hours  
P10 — 1 hour  
P11 — 1 hour  
P12 — 1 hour  
P13 — 1 hour  
P14 — 1 hour  
P15 — 1 hour  
P16 — 1 hour  
P17 — 1 hour  
P18 — 1 hour  
P19 — 1 hour  
P20 — 1 hour

39  
39-394

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This table will contain results of comparisons over both

# American Aircraft Products and Foreign Markets

Large Increase in Exports Shows That Profitable Outlets Exist

By GRISCOM E. HAYNES

Department of Commerce

**T**HIS LARGE increase in our aircraft exports in the latter months of 1927 (particularly October—the largest since the World War period) shows that a real and profitable market for our aircraft products exists outside the United States. The aeronautical flights of the past year have advertised our aircraft products to the ends of the earth and have resulted in many surprises being received by our makers from prospective purchasers and agents abroad. Some of these have translated into tangible orders and shipments as is evidenced by the increased exports referred to above. Specifically our exports for the first 10 months of 1927 had a wholesale value at ports of \$11,696,369 or about 64 per cent more than for the whole calendar year of 1926. Of this total, \$372,636 was registered in October (the latest month for which figures are available) which is the highest monthly total recorded since the World War.

## A Period of Negotiations

It was not to be expected that the tremendous advertising of American aircraft products abroad and overseas would be immediately reflected as exports. Naturally there would be a period of negotiations before orders were received. There would also be a lag of time between the placing of orders and actual shipment and the fact that the larger number of our makers are behind in delivery orders last year prevented many export sales from being promptly filled. Consequently the increase registered up to the beginning of the winter months is much more encouraging than the actual delivery and sale figures would indicate. If October figures referred to above are any indication of future foreign demand the winter of 1927-28 will be a period of activity in foreign orders by our manufacturers.

Our export trade in aircraft products (save for the operations of a few firms) has always been of an intermittent nature. Consequently European makers, aided by their respective governments, have systematically exploited foreign markets and have established one market after another in the most logical sections of the Western Hemisphere. The position, then, of that can be said that the exports of English firms to the French market for aircraft products are distributed all over the world, enabling a production unimpeded in a time of peace. French exports of aircraft products during 1926-1927 had a value of more than \$11,696,369 at current rates of exchange. English exports of aircraft products have been valued at between five and six million of dollars a year for the past several years. These examples show that a market for aircraft exists abroad and that competing makers are taking advantage of it. With the present high postage of our planes, engines and other equipment abroad, no better time could be imagined for our makers to launch a determined

campaign to get foreign orders. There is a more or less costly premium placed in developing this trade, but the experience of our competitors have shown this development work to be justified.

In considering future development of our potential export trade the statement can safely be made that it will be composed largely of commercial equipment. In view of the large proportion of military equipment making up our present exports, this statement sounds favorable. However, the trend is toward self-dependence for military aviation as previously mentioned today. Consequently our exports of military designs will probably become more and more limited to the sale of limited numbers of units as prototypes and the inevitable export sales of the rights of manufacturing rights of designs as various bases for production in other countries. Commercial planes, however, will not be hampered by the spirit of nationalism or military expediency. In fact, due to the independent character of the industry in this country, the products of our makers will have a distinct advantage in being designed for the increased efficiency. Foreign makers, inspired to compete elsewhere in the field of military aviation, authenticity in order to take advantage of sales, will be found at an operating disadvantage in competition with American equipment constructed along purely commercial lines.

These conditions prevailing, it follows that independent operators the world over will turn to American equipment solely upon its competition sales rate. Their operations, efficient transportation may be sold anywhere as is proved by the case of the American automobile, and American commercial airplanes may be expected to follow in its footsteps.

## Should Maintain Lead in Field

In considering our immediate problems in the export field, many advantages and disadvantages present themselves. Nowhere else in the world have purely commercial designs of aircraft, designed for efficiency in both manufacturing and operation, been carried to such extremes as in this country. Nevertheless the development of power plants suitable for commercial purposes has not been successful. No other country presents such a large domestic market, highly competitive and independent, for commercial planes and engines. With all these factors making for efficient production and marketing, it will be strange indeed if we cannot maintain our lead in the field against foreign makers.

There is no denying that our makers also work against many handicaps at the present time. Governmental aids, such as the active aid of military missions, help foreign orders in many competitive markets and in many cases various aids are given them in their manufacturing operations either of



**OUTSTANDING** among the notable Achievements in Aeronautics during 1927 was the capture of Four World Records by the new Vought "Corsair" Airplane.

**OUTSTANDING** because these World Records – One for Altitude and Three for Speed – were made with a strictly stock naval service "Corsair" Seaplane.

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**OUTSTANDING** because each and every Vought "Corsair" is guaranteed to equal or better these World Record performances; and is sold with such a guarantee –

*More Miles and More Hours were flown in Vought Airplanes during 1926 and 1927 in the U. S. Naval Air Service than in any other type.*

**CHANCE VOUGHT CORPORATION**

LONG ISLAND CITY, NEW YORK



which can be said to be available to our manufacturers. The depreciation of certain European currency has helped some of our competitors to make sales easier. Licensing requirements for commercial planes in many countries militate against the sale of American planes in those countries. As an instance, the Spanish Air League, which was so adamantly opposed by French manufacturers, still exists and is not limited in France for commercial purposes under existing regulations prohibiting civilian sale within frontiers.

Despite the handicap cited above, our exports of aircraft products have shown a steady increase since the immediate post-war period, almost paralleling increases in production during the same period. The value of our aircraft products exports was \$432,500 in 1929; \$789,275 in 1930; \$784,606 in 1932 and \$5,322,219 in 1936. These figures are acceptable in that they do not include planes flown to other countries, such as Canada, Mexico, etc., for delivery. Figures for only the first ten months of 1937 are available but the total exports for that period of \$1,469,592 are about 44 per cent in excess of the total for the whole year preceding. If the month of October, 1937, with exports of \$372,829 can be disregarded as indicating a definite trend, it is possible that 1937 exports will double those of 1929.

#### Canada Was Largest 1937 Market

Canada was our largest market for aircraft products in 1937, followed by France, China, Russia, Belgium, Japan, Germany and Colombia in order named. This shows that our market is not restricted to countries of the western hemisphere. South America leads the other continental areas, followed by Europe, North and Central America, and the Far East in the order stated.

This is in contrast with 1929 exports, over half of which went to Europe, the balance being divided between North and South America, with only a small total to the Far East. In the following tableshow is shown the distribution of our aircraft products by countries and continental areas as our exports during the first ten months of 1937.

#### NORTH AND CENTRAL AMERICA      EUROPE

	Canada	U.S. & Russia	Europe
Mexico	17,762	81,552	54,265
Uruguay	—	—	84,182
Argentina	24,000	—	75,031
Colombia	20,649	—	30,000
Bolivia	—	—	12,000
Buenos Aires Republic	5,877	—	12,000
Peru	4,944	—	10,000
Chile	—	—	5,475
Uruguay	351	—	4,846
British W. India	391	—	4,288
Total	85,625,539	187,606	120
	Total	843,673	

#### SOUTH AMERICA      FAR EAST & MISCELLANEOUS

	Peru	Japan	Australia	South Africa	Philippines	British India	Philippines Islands	British Malaya	British India	China	Total
Chile	223,482	—	—	—	—	4,720	—	—	—	—	4,720
Colombia	67,544	—	—	—	—	—	—	—	—	—	67,544
Argentina	18,200	—	—	—	—	1,018	—	—	—	—	18,200
Brazil	—	—	—	—	—	—	—	—	—	—	—
Venezuela	—	—	—	—	—	—	—	—	—	—	—
Total	366,247	—	—	—	—	—	—	—	—	—	366,247
	Total	934,982	877,631	4,720	1,018	1,018	437	400	239	383	966,770

## Pacific Technical University

Organized at San Diego, Calif. ORGANIZATION of the Pacific Technical University was recently announced at San Diego, Calif. Within two months the University will open a comprehensive course in aeronautics, teaching by mail the theory of flight and flighting the student's experience by serial factory training and flying experience under the personal supervision of instructors.

"Now that the future of commercial aviation is assured and the industry destined to grow with great regularity," said P. H. Heron, president and chairman of the board of directors,

"we are facilities must be provided to train technical men who will be required to keep the world's wings in motion. There is a great field for service of a properly educated institute such as the Pacific Technical University. There can be no doubt, and it is for this reason that the first real activities along this line open the road to a long and glorious future for our business men, aeronautical and automotive engineers and educators who realize the responsibility which such a school will have in the future development of aeronautics."

In explaining the place and policies of the University to a representative of *AIRCRAFT* magazine, Mr. Heron stated that it is the board's purpose to confine its activities on the highest possible standards, to admit enrollment only from "ambitious" young men who intend to make the business of flying a lifetime profession, and not to cater to the casual student who seeks only a superficial knowledge of aeronautics.

Asked management of the affairs of the institution, will be in the hands of an officers' board of directors and advisory board. P. H. Heron, president, is a graduate of San Technical School, Chicago; formerly a student at the San Diego State Teacher's College. He also has had experience in the University of Illinois, University of Wisconsin, University of California and Arizona Institute of Technology. Ray Heron, supervisor and treasurer, a former faculty member of the University of Arizona as an instructor of aeronautical engineering, is an associate member of the Society of Aeronautical Engineers of New York and the Southern California section. Other members are A. R. Weston, Secretary; Robert Bentley, Edward C. Taylor, to be in charge of Aeronautical Engineering, Mathematics and Machine Drawing; L. T. Kettredge, to have charge of aeronautics instruction.

The board of directors is composed of H. J. Edwards, Heron, Bay Reynolds and A. R. Weston. The advisory board consists of Henry C. Johnson, formerly superintendent of San Diego City Schools; Lark Col. Charles M. Frost, coast artillery reserve; O. S. McPherson, executive manager of the San Diego Chamber of Commerce, and others.

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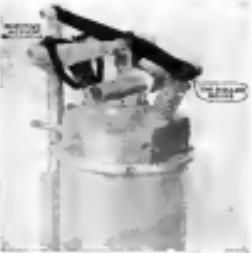
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## Temple N. Joyce Appointed Sales Manager of Chance Vought Corp.

ANNOUNCEMENT has just been made by Chance Vought Corp. of the appointment of Temple N. Joyce, of Annapolis, Md., as sales manager in charge of service and sales.

Mr. Joyce, who is a well-pilot of international repute, is well fitted to assist in presenting the well-known Vought family of designing and producing outstanding types of military aircrafts, as well as to assist in presenting the many superior performances and capabilities of the Vought aircrafts. He will later over sales activities furthered by Chance Vought.

Additional being made to the Vought factory and offices will double the company's facilities to take care of the rapidly increasing demand for its aircrafts. While Mr. Joyce's headquarters will be at the Long Island City plant of the company, he will also maintain an office in Washington, D. C., and also spend considerable time at San Francisco.

In 1917 Mr. Joyce was commissioned in the Air Service, having resigned his activities as sales engineer with the Textron Steel Co., and obtained his commission as a second lieutenant. He became a first pilot and later promoted chief test pilot, and in 1919 was made a captain. In 1923 he was commissioned as an in the Army Air Service Reserve, which commission he still holds. From 1919 to 1926 Mr. Joyce was the American representative of Marconi-Standard, the well-known French aircraft manufacturing firm.

From November 1926 to November 1927, he was the Washington representative of the Curtiss Aeroplane & Motor Company, Inc., principally acting as their representative test pilot in addition to handling sales and engineering work in Washington. Mr. Joyce's ability as a pilot has called forth much favorable comment on many occasions and this, with his knowledge of the aeronautical technical problems of the Army and Navy Air Services, has undoubtedly been an important factor contributing a great deal to his success as airplane sales and distributor.

His interest in, and efforts toward, the development of civil aviation is reflected by his appointment on the Maryland State Aviation Commission and the Baltimore Airport Commission, and his active membership in the Flying Club of Baltimore. He takes a very active part in these organizations and has been an important factor in advancing the new \$6,000,000 airport now being developed for the city of Baltimore.

The Vought Company is completing use of the new "Dixie" high-speed two-seater for Mr. Joyce to use in demonstrations, and in commuting by air to Washington, and for trips to the West Coast.



Temple N. Joyce, newly appointed sales manager of Chance Vought Corp.

## Strauss and Buegeleisen Low Bidder On Goggle Contract for the Navy

STRAUSS & BUEGELEISEN Co., of Brooklyn, was low bidder when the Navy opened sealed bids for a new type and passenger type goggles. The pilot type is a Navy development that has been recently approved. It has a special curved lens that gives an unusually wide range of vision and the frame rest to a sponge rubber mask. The passenger type is the regular Strauss & Buegeleisen "Roundel" non-shatterable lens goggle, but equipped with a sponge rubber mask. The lens are worked to a plane and are in the conventional type frames.

The passenger type goggle is being marketed commercially and is known as the New Navy Model Roundel. The sponge rubber face mask gives a tight fit without pressure being concentrated at any one spot. It is not to be erroneously convertible about the nose. This new goggle is not interchangeable with a standard type, as it would render it difficult to remove the lenses. As mentioned above the goggle is equipped with Roundel lenses and they can be supplied in any color or diameter. Plans are also being made to market commercially the navy pilot type goggle.

## National Flying Club of America Appointed Air-King Distributor

THE NATIONAL AIRWAYS SYSTEM of Los Angeles, Calif., has appointed the National Flying Club of America, Inc., its distributor for a territory comprising Denver, Colo., and the six New England States. Headquartered at the club's distributor will be at 18 Clinton Street, New Haven. The club will appoint agents to represent it throughout the territory. Charles Fields is president of the National Flying Club and Sidney Glazebrook secretary. Mr. Fields is also president of the Fields Airways, and was formerly associated with the New York distributor of the American Eagle Fields Airways against air taxes, etc.

The National Airways System encompasses the well-known All-American Airlines. During the past 1927 the company produced 25 planes. Increased production is planned for 1928.

## Consolidated Gets Navy Contract For Training Planes and Parts

THE NAVY Department has awarded a contract to the Consolidated Aircraft Corp. of Buffalo, N. Y., for eight aircraft and parts at a cost of \$65,000. They are training planes equipped with Wright Whirlwind engines of the type now used at the Navy's air bases.

Another contract was awarded to Tippett & Wood, Inc., Philadelphia, N. J., for construction of a mobile incinerator for the Douglas Los Angeles, at Lakewood, N. J., for \$67,500.

## Fifth Aviation Company Files Application for Incorporation

VEALE AVIATION, Inc., of Hazelton, Pa., has applied to the Public Service Commission for incorporation as a flying service for passengers and freight. W. G. Dugay, William D. Veale and Oliver E. Phillips, of Hazelton, are the promoters. The capital stock is \$50,000.

The application in the fifth within the past month for incorporation is an aerial transportation company within the state of Pennsylvania.

*In 1928 —*

# PIONEER INSTRUMENTS

on the TRAVEL AIR PLANE



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TRAVEL AIR

quality needs no introduction.

It is quite natural, then, that in 1928 Travel Air should use the Pioneer Instruments here illustrated.

When Travel Air installs Air Speed Indicators, Compasses, Bank and Turn Indicators, Fuel Level Gauges and Navigation Lights, they will be Pioneer exclusively. In fact, Pioneer Instruments are almost invariably the choice of those manufacturers who produce planes of superior quality, dependability and performance.

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- Fuel Level Gauge
- Fuel Pressure Gauge
- Fuel Strainer
- Hand Fuel Pump
- Hold Flares
- Lamps, Instrument
- Landing Lights
- Navigation Lights
- Octant
- Oil Pressure Gauge
- Power Fuel Pump
- Refueling Pump
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- Wiley Flares

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## Looking Back at 1927

CONT'D from page 25

by the original Wright Whirlwind engine that was in the plane on the New York-Peace flight.

Shortly before Aug. 16, there began what might be numbered a black period in aeronautics during 1927. Juan D. de la Sierra had offered \$25,000 in prize money to the first two planes to make a nonstop flight from California to the Pacific Islands. Several aviators entered the race which was referred to as the "Dole Derby," and due to various reasons, the principal one being contestants' tame as to practice flying, the race was not run. The contestants took place before the race was ever started. The original date for the start of the race from the Oakland Airport was Thursday, Aug. 24, 1927, but as the result of an agreement between the race committee, the race was put off until noon of the following Tuesday, Aug. 29. The race was won by Arthur G. Goebel and Louis W. H. Davis, U.S.N., pilot and navigator, in the Travel Air monoplane "Woolaroc" (Wright Whirlwind), which covered the distance from Oakland Airport to Wheeler Field in 26 hr., 17 min., 30 sec. Second place winner, and undoubtedly the only other plane to complete the flight, was the Stevens monoplane "Albatross" (Wright Whirlwind), piloted by Marion Aebersold with Fred Rehseker as navigator, which completed the flight in 38 hr., 18 min. Of the eight planes which started the race, two crashed on the runway of Oakland Airport and those two, both of whom were rescued two hours later. The plane piloted by J. W. Frost with George Booth as navigator, was never heard from. It had been forced down over the open water of the Pacific, nor was the plane piloted by John A. Pfeifer and accompanied by Louis V. E. Kastor as the navigator and Miss Mildred Horner, the only woman in the race. After tearing back from an initial attempt to make the trip Capt. Wm. F. Erwin took off again on the following morning in his plane with the intention of seeking the whereabouts of Frost and Pfeifer. Horner wrote in her husband's word that he was in a spin and going down. That was her last message to the confused world. As the result of these disastrous many and varied protests were filed in Washington against the continuance of trans-oceanic air races, and for a time the former exercises were relegated to the record shelves.

Another dark day in aeronautics in 1927, was Aug. 25. On this day Paul Rodders took off from Glynn Isle Beach, Brazil-



The start of the Farn-For-AU Military Pursuit Ship Race, held during the 1927 National Air Races, at Spokane, Wash.

wick, Ga., to attempt a 4,000 mi. nonstop flight to Rio de Janeiro, Brazil. At the time of the take off the plane carried a load of 625 gal. of gasoline which would enable Rodders to stay aloft, barring accidents, for about 32 hr. The flying schedule mapped out called for his arrival in Rio de Janeiro around 2:30 P.M., Aug. 27. Since the first night when he was sighted flying over open water by a north bound steamer, no word has been received of the pilot's fate. All efforts



The "Detroit" (Hill and Schlesinger) winner of the 1927 Gowen-Detroit International Balloon Race.

to locate his plane and also the planes of the missing Dole Derby fliers have proved futile.

A fourth successful aerial crossing of the north Atlantic was accomplished on Sunday, Aug. 26, when after a 23 hr., 15 min. nonstop flight start from Harbor Grace, N. F., Edward F. Stables and Wm. S. Brock landed a Stinson-Drexler monoplane (the National Air Tour winning plane and later christened the "Pride of Detroit") at Grayling Aerodrome, England. This flight marked the accomplishment of the first leg of a contemplated aerial trip around the world. The flight progressed successfully as far as Tokyo, Japan, a distance of over 12,000 mi. after. Upon arriving at Tokyo, Brock and Stables received so many requests to abandon the



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Aeronautic Department

THE GOODYEAR TIRE AND RUBBER COMPANY, INC., AKRON, OHIO

**GOOD YEAR**  
AIRPLANE TIRES

attempt to fly across the Pacific that they gave up in to waves of relatives and the general public and returned to the West Coast of America by boat. They had originally set out to establish a new round-the-world record, and with their arrival at Japan they were a little over one week ahead of the existing round-the-world record of 28 days.

The first trans-Atlantic flight happened on Sept. 6, when "Old Glory" piloted by James E. M. Hill with Lloyd Wilson, passenger, and Frank A. Piggott, passenger, full into the waters of the north Atlantic, while attempting a non-stop flight from Old Orchard, Me., to Rome, Italy. When last heard from the plane was 8½ hours off the coast of Newfoundland, and in the early morning of Sept. 7, the liner California reported the plane overheard and flying well. Four hours later the steamer Carmania and Lapland picked up an S.O.S. from the plane, but no position was given. From that time on no further word was received and some weeks later a steamer picked up a portion of the plane that was floating around in mid-ocean. The plane was powered with a single British Jupiter 300 hp. engine and is taking off with a full load in the hands at Old Orchard a run of approximately a mile and a half was necessary. It had been originally intended to take the plane off from Roosevelt Field, L. I., but due to the absence of a favorable wind it was decided to use the hands at Old Orchard.

On this same day, and as a matter of fact, only a few hours after the S.O.S. call had been received from Old Glory, Capt. Tony Tandy and Capt. James Modell took off from Heston, N. W., in their monoplane, "Sir John Corlett," bound non-stop to London, England. To all appearance the plane was functioning properly as it sailed into the eastern sky. However, like some of the other ill-fated trans-oceanic planes no trace was found of either plane or its occupants once it had disappeared from view.

#### American Wins Gordon Bennett Balloon Race

Sept. 12 marked the running for the second time in memory of the Gordon Bennett International Balloon Race. The 1927 race which was held at the Ford Airport was won by E. J. Hill and A. G. Schlesser who piloted their entry the "Detroit" to Basle, Ge., having a total distance of 725 mi. from the starting point. Second place was also won by Americans, Ward T. Van Orman and W. W. Morton covered 570 mi. in the "Goodfellow V-2." Third place was had for the Germans, balloonists Hugo Kaulan and A. Wild in the Barman and the pilot of the French entry "Lafayette," each team covering 660 mi. In winning the now American retains the Gordon Bennett trophy for another year and should thus proudly succeed in winning the 1928 race it will become the permanent owner of the trophy. The victory by Hill and Schlesser marks the sixth victory for Americans and places this country in the position of having won the annual largest number of races. Britain is first with five victories to its credit.

The morning of Sept. 13, saw the beginning of what is regarded as America's annual aeronautical classic, the National Air Races. On this date the planes in the Class A and B from New York to Spokane, Wash. (where the air races were held) took off from Roosevelt Field and started their dash across the country. The first race was won by C. W. "Speed" Hallman, who piloted a Laird biplane (Wright Whirlwind) which had to land in a field strong head of 18 hrs., 42 min., 47 sec. E. E. Balsillie to another Laird plane finished second, and N. H. Meurer was third place in a Borth "Aristo." On the following day the planes in the Class B race took off from Roosevelt Field. This race was won by Charles W. Meyers who made the trip in a Waco 10 in the official flying time of 39 hr., 13 min., 15 sec. Second place

was won by Leslie Miller in an Eaglecraft plane, and another Eaglecraft plane piloted by E. S. Charles was third place. A non-stop race from New York to Spokane in which two Stinson-Detroit monoplanes, one piloted by Eddie Stinson and the other by "Duke" Reitler and an "Air-King" biplane piloted by Jack Lacey were entered, and proved unsuccessful as both Stinson and Reitler were forced down a short distance east of Spokane and the "Air-King" failed to get started.

A Class A and Class B Derby from San Francisco to Spokane on Sept. 21 were won by M. G. Lippatti and Gen. L. Langdon respectively. Lippatti flew a Travel Air plane and his total time for the trip was 8 hr., 16 min., 27 sec. Langdon total time for the trip was 8 hr., 16 min., 27 sec. Langdon



Wm. B. Brock (left) and Edward P. Shelden on front of their Stinson monoplane "Pride of Detroit."

day flew an International biplane and his flying time was 8 hr., 58 min., 18 sec.

The National Air Races themselves were held from Sept. 12-25 and during this time the visiting pilots competed in 23 different events. Space does not permit a review of these events, but the two outstanding events were the Liberty Engine Builders' Trophy Race for Observation Planes which was won by Louis E. A. Johnson in a Curtiss X-12-L-2 plane with a speed of 173,036 m.p.h., and the Free For All Military Pursuit ship race which was won by Louis E. A. Johnson in a Curtiss XP-2A plane at a speed of 301,200 m.p.h.

With reference to the 1927 National Air Races one fact is worthy of noticing, that for the first time history records and this was, a way to compete in flying had with the Rich's Derby Association of Spokane by public subscription who supplied the funds. Total receipts including funds raised from ticket sales, concessions and miscellaneous sources, amounted to \$514,363.36, while expenditures totaled \$413,166.09, or all \$47,194.27 was put out in prize money and \$39,413.06 for trophies and their expense directly incidental to contests.

Oct. 13 was the beginning of a third unsuccessful attempt

## Pilot-Instructor Turns to the Institute for Further Study

YOU men who are in Aviation will be interested in Mr. Cameron's letter—and in his point of view. It is sound. He is wise to seek to "be in a better position to impart information to others, while instructing them in flying."

It is always the man who is who seeks to improve. They are the ones who get ahead—who rise above the crowd, in more ways than one.

The Aviation Institute course of instruction is so clear, so simple that any man of average intelligence, who never before has given any study to Aviation, can master it easily at home, in his spare time. Yet it is so thorough in everything that a man needs to know of the fundamentals and principles of this great, new, growing industrial field that even experts turn to it for further study, to advantage.

There is a great similarity between the present status of the Aviation industry and what the automobile business was in its early stages. Aviation is taking the whole world by storm. It is expanding rapidly, in every direction. Naturally in its commercial activities. Hundreds of great new fortunes will be made. You will see men apparently get rich over night.

But Aviation is suffering from growing pains. Its opportunities are too many, too large to be met by the few trained men we have in the business. Everywhere leaders are hungry for men who know.

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to fly non-stop across the Atlantic, but fortunately the time the occupants of the monoplane "American Girl," George Haldeman and Miss Ruth Edson, were record when their plane was forced down on open water some 305 mi. northeast-northwest of the Azores. The plane had taken off from Roosevelt Field on the late afternoon of Oct. 16, with a gasoline load of 800 gal. After covering approximately 3,000 mi. engine trouble developed and it was necessary for pilot Haldeman to land on the surface of the water close by the Dutch island Bonaire which was two days out from Bremen bound empty for Daytona, Texas. Haldeman had Miss Edson and Haldeman have been absent when the plane burst into flames and sank. After the course the tankard headed for the Azores where it safely landed the record aviation.

The Mitchell Trophy Pursuit plane race which had recently been held at the time of the National Air Races was flown on Dec. 22 at Dayton, O., on Oct. 22, in connection with the induction of Wright Field. Fifteen planes started and the



Line. "A.P. Wilson, U.S.N., biplane for Eichmann. Pushed rear fitted with ground landing gear.

inland, but 10 of them were disqualifed, and the race which consisted of nine circuits of a 13.96 mi. course was won by Lieut. Irving A. Woodring with an average speed of 128.05 m.p.h. The fastest lap was made by Lieutenant Eichmeyer with a speed of 155 m.p.h.

Although no official information has been made relative to the speed tests conducted by Lieut. Al Williams in his Kurtz racing plane equipped with a 1260 hp Packard X engine, it is worthy of mention that Lieutenant Williams originally intended to enter his plane in the 1927 Schneider Trophy contest, but the plane was held at Venice, Italy, and Williams was won by Flight Lieutenant G. A. L. T. D. Williams. The Williams plane, with an average speed of 201.488 m.p.h., had maintained the world's record for the highest speed mark. When it was found that it was impossible to prepare his plane in time for this race Lieutenant Williams substituted portions with a ground landing gear, and when another Lieut. Tom Sopwith was made it was officially estimated that he flew at a speed well over 300 m.p.h. Should Lieutenant Williams be able to duplicate this speed in official tests he will break the world's record of 268.7 m.p.h., established by Major de Rosario over a three kilometer course at Vasto, Italy, several weeks after the Schneider Trophy contest.

Nov. 4, was a day of tragic events. On this date Captain H. W. H. Gray of the Army Air Corps went aloft in a free balloon at Glendale Field, Bellflower, Cal., and reached a height of 63,479 ft., a height heretofore unachieved by man. However, the attempt cost the captain his life. When he was found dead in the basket the following day in the trees near Sparta, Tenn., his oxygen tube had been severed by a kink. At the official investigation it was decided that Captain Gray had accidentally cut the tube while trying to cut away equipment suspended in order to reach a higher altitude.

On Nov. 16, the Bureau of Standards reported to the War

Departments that calculation of the biography revealed that a height of 62,499 ft. had been reached. This height is exactly the same as was reached by the late Captain on May 4. Due to the fact that he was forced to jump at 8,000 ft., when his balloon was descending too rapidly, the Federation Aeronautique Internationale at Paris refused to recognize the record. It is expected that the N.A. record will be appraised by that aeronautical body.

#### Colonel Lindbergh Flies to Mexico

The best airplane accomplishment of the year was undertaken and successfully completed by the year's outstanding aviator, Col. Charles A. Lindbergh. On Nov. 6, Col. Lindbergh took the Spirit of St. Louis off Belling Field, Washington, D. C., and started a 2000 mi. non-stop flight to Mexico City, Mexico. The time of this flight was 27 hr., 39 min., or approximately six hours less than his famous flight from New York to Paris. At the time of the take of the plane had a full load weighing 4,750 lb., including 360 gal. of gasoline and 16 gal. of oil. Similar to his Paris flight he made another spectator take off, the weather being so bad that he could not get away and added a run around the course. At 5:00 A. M. Col. Lindbergh took off in the Spirit of St. Louis off the ground, not having starting the trees at the far side of the field. According to Colonel Lindbergh himself, this trip was in some ways the most interesting flight he has ever made. He had blind track of the time and in view of the course he was taking he was forced to fly at altitudes for about 1350 hrs.

After a short stay in the Mexican capital he will make a tour of Central American and South American countries and return to St. Louis by way of Cuba. With his trans-continental flight, the trans-Atlantic flight, the tour of the country and the Mexican flight it is estimated that Colonel Lindbergh has piloted the Spirit of St. Louis for a distance well over 30,000 mi. The Wright Whirlwind engine has been overhauled only once since it was installed in the plane and that just after it had traveled over 20,000 mi.

What facts will be accomplished by the airplane during 1928 is a matter for speculation, but at this writing final preparations are being made by those men of American aviation to bring back to America the world's record. The record which was captured from France and Canada by record which was captured from France and Britain, Aug. 5, was by the German aviator Egon and Werner. The Aug. 5, when they recorded a flight in a Junkers J-23-L plane for 500 mi. over 21,000 ft. If any of these attempts prove successful the sum of airplane accomplishments during 1928 will have begun to exceed the total number as they did in 1927.

## 1928 Schneider Contest to be Held in Month of September

THE WAR recently announced by the Royal Aero Club that next year's Schneider Trophy contests will be held on September at Blackpool, Lancashire, the Solent, or Liverpool. It is reported that the British Air Ministry has decided not to allow service planes to participate in the race next year. Unless the Air Ministry can be induced to reconsider its decision it is held that there is a great danger that Britain will not be represented.

This means that unless the United States, which did not compete this year, decides to re-enter the British will be left alone.

It is understood that the British Aero Club has taken a hand in this matter and is bringing every possible influence to bear upon the Air Ministry.



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John Morris, General Manager, has directed over 1000 post-graduate students, having taught them the most advanced problems in aeronautics, including the most advanced American operations in radio, aeronautics, transports and associated disciplines.



Clouds Bessing, chief Flying Instructor, is a celebrated aviator. He has been flying for the past 10 years and has taught hundreds of young men flying. He has also taught many young men to instruct others. He is one of the most successful flying instructors in America.



Walter M. Marshall, chief Flying Instructor, is one of the world's greatest aeronautical engineers. He is a graduate of the University of Michigan and has taught many students in the field of aeronautics. He is a distinguished engineer in the field of aircraft design and has been a member of the Air Force several years.

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**Plan Air Service at Cherbourg To Connect With Ocean Liners**  
PROPOSALITIES of an air service at Cherbourg, France, are reported by the Department of Commerce in a statement received from Counsel Samuel H. Wilky. It is stated that this proposition is receiving the attention of commercial aviation companies in Europe as a connection with ocean liner.

The initial air service contemplated is a passenger and mail connection from Paris and London with the first trans-Atlantic liners arriving and departing from Cherbourg. Passengers to whom the element of time is of importance, could by means of a service of biplanes and seaplanes operating in conjunction with the arrival of first liners, arrive in Paris five hours earlier and London about six hours earlier than by present.

It is believed that sufficient number of passengers and a sufficient quantity of mail would avail of an air service between London and Paris and Cherbourg to make the service feasible from a financial standpoint. The C. I. T. French company, and the Imperial Airways, British company, have studied the feasibility of a service from this port and both companies have expressed their intention of inaugurating such a service when the existing obstacles are removed.

### W. A. Mankey Now Chief Engineer Of B. F. Mahoney Aircraft Corp.

W. A. Mankey, former chief engineer of the Douglas Company, Santa Monica, Calif., and for the past six weeks with the engineering staff of the B. F. Mahoney Aircraft Corp., has been appointed chief engineer of that company according to officials of the Mahoney Company.

Mr. Mankey, after graduating from the engineering department of Dakota Wesleyan University was employed by the Bureau of Aeronautics, Navy Department to assist in the development of the NC type seaplane. After six years with the Bureau he went to California to work with the Douglas Company.

Since his connection with the B. F. Mahoney Aircraft Corp. a number of improvements have been made on its current production "Brougham" which will be the production type for a number of months.

### San Diego Votes a Bond Issue To Establish Triple A Airport

"LINDENHOLM FIELD", a downtown airport, was sold by residents of San Diego, Calif., in a recent bond election. It will be a class Triple A airport, available for both land and seaplanes. Work will begin within a month, a chassis of concrete foundations and when it is completed the airport will be completed by next July.

The bond election was free to use the only bond issue of several on the ballot that received the required two-thirds majority. A statement by W. W. Gibbs, president of the San Diego Chapter of the N. A. A. declared that the citizens of San Diego recognize the importance of commercial aviation and its far reaching possibilities for the future.

As part of the celebration on the day of election at the B. F. Mahoney airport approximately 30 military, naval and civilian airplanes were placed on exhibition and a crowd of several thousand people reviewed them.

### F.A.I. Awards World's Airplane Altitude Record to C. C. Champion

OFFICIAL ANNOUNCEMENT was recently made by the Federation Aeronautique Internationale of the World's record for altitude of 26,974 ft., made by Louis G. C. Warner, Jr., U.S.N.C., on July 26, 1936.

Lieutenant Champion made this record in the Navy Apache" biplane fighter equipped with a Pratt & Whitney "Wasp" engine. A B-67 type supercharger developed by the National Advisory Committee for Aeronautics at its experimental station, Langley Field, Va., was used in connection with the Wasp.

It is related that Lieutenant Champion, with the same equipment, established the World's altitude record for seaplanes when he reached a height of 23,895 ft. on July 4, 1937. These two same major World's records have been brought back to America.

One of the most remarkable features of Lieutenant Champion's World's records has been his personal accomplishment. Several previous experimental flights to very high altitudes were made on the day he established his last plane record. These flights were made for the purpose of making various adjustments in his equipment. All his attempts were very much in the nature of coast round flying.

"Wasp" engine now holds three World's altitude records in various classes. It will be standard on Vought "Gambit" equipped with a standard "Wasp" engine, both World's records for altitude and speed, carrying a load of 500 kg. These splendid performances of the "Wasp" seem to bear out the contention that the air-cooled radial is unequalled for high altitude performance.

### Find Weather Conditions Alright For Key West Seaplane Service

ESTABLISHMENT of a seaplane service from Key West to the Cuban Isles and all Central American ports has been found entirely practicable from a meteorological standpoint, the assistant secretary of the Navy for Aviation, Edward P. Warner, has announced.

Investigation of weather conditions over this route made by the Hydrographic Office of the Navy Department, Mr. Warner said, has shown that the service could be established. The Navy has undertaken this research, it was announced, with a view of simulating the inconveniences of such a service by commercial interests.

The Navy has already received bids for about 20 PBY-30 type seaplanes designed for such a service, and a contract for about 20 such planes will be awarded shortly. It is the intent of the Department, to replace the last of the war-time flying boats now in service with new types of flying boats and that other designs for new craft have been submitted.

### Aviation Correspondence Course Opened by Rankin Flying School

THE RANKIN Flying School, of Portland, Ore., has added a correspondence course in aviation to its curriculum. It is the first school of its kind in the Northwest. The school now has an enrollment of 150.

The newest member of the school's teaching staff is Edward L. Willis, United States meteorologist in Portland. His will teach meteorology. He retains his government position.

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## Crash of the Focke-Wulf "Ente"

Not Due to Aerodynamic Design

IN THE NOV. 14, 1927 issue of AVIATION there appeared an article describing the Focke-Wulf "Ente," the German plane of the canard type with the horizontal stabilizing and control surfaces in front of the main wing. In the article it was mentioned that Hans Wolf, designer, builder and pilot of the plane was killed while flying the "Ente." It has since been learned that the accident was due in no way to the aerodynamic design of the plane. The plane was powered with the same engine as the Fokker F.VII, which is the same as the D. 1000 from Wolf was flying. The plane's propeller was stopped. In this position it was necessary to have the horizontal stabilizer, which was at least, twisted around to an extreme position with its leading edge at an angle to the landing edge of the main wing. It is reported that, while flying as the position that the other engine cut out. As Wolf was at a low altitude the plane came down in the ground before Wolf had an opportunity to reposition the forward stabilizer. The landing was hard but the plane was not damaged to any great extent. Wolf was killed by a fractured left striking him in the head.

## Three Wasp Three Engined Fokker Planes for Western Air Express

THE ATLANTIC Aircraft Corp., Elizabeth, N. J., builder of Fokker airplanes has been awarded the contract for the construction of three large passenger planes to be used by the Western Air Express for service between Los Angeles and San Francisco. It will be recalled

that the Western Air Express recently obtained an equipment loan from the Daniel Guggenheim Fund for the Promotion of Aviation. The planes will be in many ways similar to the standard Fokker F.VII. They will be powered with three Pratt and Whitney "Wasp" engines and will carry 12 passengers and two pilots in addition to 1,000 lb. of mail and express. The planes have been designed to have a high speed of 120 mph. and a cruising speed of 110 mph. The cruising range will be 300 mi.

The wing of the planes will be identical to that on the Fokker F.VII used by Commercial, Hynd and Lemanski Mac and Eltzrothberger as their trans-Atlantic flights. Due to the increased load the fuselage will be entirely different. The enclosed coils for the three planes to be delivered by April 1, 1928.

## Lloyd Stearman Elected to Head Stearman Aircraft Co. of Wichita

LODGE STEARMAN, designer of the Stearman biplane, has been elected president and general manager of the Stearman Aircraft Company, which recently moved its plant to Wichita, Kan., from Visalia, Calif.

Other officials of the company are "Mac" Stear, vice president; Walter P. Jones, Jr., secretary, and Harry Edmon, treasurer. Other directors are C. L. Henderson, J. L. Swanson, and Ralph McMichael.

The voting trust agreement plan is being used and is the administration of the company, the stock being deposited with three trustees who have authority over expenditures. They are Macmillan M. Murdoch, Howard Wheeler and George H. Brown.

## The Modern Pony Express

STEARMAN Mail planes are flying on the Varney Air Lines and the Colorado division of the Western Air Express. Each airplane is completing six thousand miles of strenuous flying every month.



The Stearman Model 75

STEARMAN AIRCRAFT HAVE A PERSONALITY

*The Stearman Aircraft Co., Wichita, Kansas*

## Approve Incorporation of Four Pennsylvania Aviation Concerns

AT A meeting Dec. 12, the Pennsylvania Public Service Commission approved the incorporation of four airplane companies for the transportation of passengers and the hauling of freight. The companies are the first chartered in Pennsylvania as common carriers by airplane.

The Gettysburg Flying Service, a subsidiary of the Potomac Flying Service, Washington, D. C., and the Reading Airways, at Reading Pa., were given permission to start operations at once. The Pennsylvania Aerail Transportation and Express Company, of Wilkes-Barre, and the Natick Aircraft Company, of Pittsfield, were told they would be granted the necessary permission as soon as they are in a position to start operations.

The certificates of public convenience granted by the Commission to the four companies will terminate Dec. 6, 1928, unless renewed. The Commission ruled that all applicants, including airports, must conform to standards prescribed by the U. S. Department of Commerce and the State Aeronautics Commission.

The companies also were told they would be required to carry liability insurance covering passengers and the general public. The monthly statements of their business and the number of passengers carried, and certain other right-keeping trips to points within the state. Companies similar to those at reduced rates must be established at each airport. The landing fees at the Commission ruled, must be more than those at airports where planes can land.

Higher service between cities and towns within the state was not provided in the four approvals. Before any company can establish routes connecting cities on regular schedules, additional approvals must be secured by the Commission, it was ruled.

## Construction of Emergency Field At Fort Tilden, N. Y., is Approved

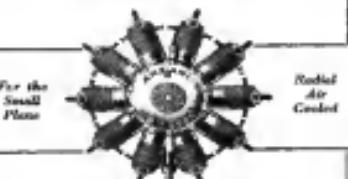
THE WAR Department has approved the project for the construction of an emergency landing field at Fort Tilden, N. Y., at a cost of approximately \$75,000.

The location of such a field at this point has several advantages. Fort Tilden is on the air route between Bolling Field, D. C., and Mitchel Field, Long Island, and the emergency landing field will make for safety along this route, as during summer and spring Mitchel Field is often covered with a dense ground fog, when Fort Tilden is free from fog it will greatly facilitate self-sacrifice target practice at that station and will also assist aerial spotting for the coast defense guns of Fort Tilden and Hancock.

## Representative Frothingham Seeks Regulation of Air Corps Exhibits

REPRESENTATIVE FROTHINGHAM of Massachusetts has introduced a bill in the House of Representatives to regulate exhibition flights by the Air Corps. It is provided that the Secretary of War is authorized to make regulations for the control and direction of the Air Department which shall be made by the Army and, if any authorized flights be given by Army personnel upon other than government fields, a board of inquiry should be formed in the United States by the parties deserving the exhibition in such case as the Secretary of War may require to cover any claims that may arise for damages to persons or property.

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## Foreign Aeronautical News Notes

By Special Arrangement with the Transportation Division,  
Bureau of Foreign and Domestic Commerce

### Poland Plans Aviation Expansion

Plans for extending and improving Poland's air service during 1928 are under consideration by the Ministry of Communications. The Warsaw-Lodz line is to be extended to serve Katowice, and new services between Warsaw-Katowice, Warsaw-Poznan (Posen), and Poznan-Lodz (Lewitz) are to be inaugurated. The new Warsaw-Katowice has will connect at Lodz with the Duszniki-Lodz line.

Two important trunk line extensions over Poland are also contemplated, namely, from Berlin to Moscow via Poznan, Warsaw, and Vilno, and from Hamburg to Ankara via Bialystok and Cracow.

It is further planned that the 1928-29 budget of the Ministry of Communications will provide several aviation grants (15,000,000 L. worth) for the construction of new airports at Poznan and Vilno, and for the improvement of existing stations at Warsaw, Lodz, and Bialystok (near Cracow). It is proposed to equip all these airports with underground gasoline tanks and meteorological stations, and also with short-wave radio broadcasting stations. Interim landing fields will also be provided in the areas along the principal air lines.

Commercial aviation services with Poland are provided

mainly by "Aerolot," which operates under a government subsidy.

### Santiago del Estero Airport Nears Completion

The Santiago Del Estero Airport is practically completed. It has four hangars with a capacity of five planes each in order of a central building. The ground floor of the central building contains "motorhangar" repair shops, sleeping quarters for transient pilots, a dining room, a first aid room, an infirmary, a library, etc. The second floor has meteorological and aerial photography offices, and the top floor is for carrier pigeons. The work on one of the hangars and the central building is practically finished. On the completion of the work, the Aero Club of Santiago Del Estero plans to send a plane on a trip covering the 34 provinces of the country.

### Planes Used in German Night Advertising

A new method of night-time advertising was demonstrated recently by a three-engined airship which flew over Hamburg with scenes of household commodities showing under the lower wing and illuminated by a current generated in the plane. It is said that very soon or next year five will be formed and

## Foreign Page (Continued)

mounted in this way to enable it to be read from considerable distances. It is expected that the plane will be followed to other parts of Germany.

### Argentina to Buy Two Planes

The President of Argentina has signed a decree authorizing the Director of Civil Aviation to purchase two Caproni Ca. 107 biplanes. These planes are to be equipped with Hispano-Suiza engines of 180-200 h.p. and are purchased with a view to visualizing the activity of existing institutions of aviation.

### New Fuel Gas Tested

Tests are now being conducted by the Heppen Works at Stuttgart, Germany, with a new fuel gas for aircraft which weighs the same as air and therefore does not disturb the balance of the craft when it is used. A report issued by the Department of Commerce from the American Consul at Stuttgart, John E. Kehl, states:

The results so far obtained are stated to be highly satisfactory. The composition of the new gas, so far as it is perfected to date, is as follows: The main body of the gas is Airgas, which is said to consist of a subsidiary motor gas, Airgas, however, is a little lighter than air. To it comes this fuel gas, an admixture of a small proportion of another fuel gas of heavier weight, probably kerosene or one of the numerous derivatives, is being considered. The outstanding advantage of the new fuel gas is that it will do away with the use of benzene which is not only a source of danger but also a disadvantage in navigation because through consumption of benzene the craft becomes lighter and therefore requires the discharging of weight of a weight equal to the benzene used. The new gas being about the same weight as air, the weight balance of the ship will not be disturbed through the consumption of gas. However, no mention is made of how hot gas is to be taken up at stations other than the base.

### Johannesburg Club Plane Delivered

The first airplane for the Johannesburg flight service club arrived recently at Durban, South Africa. The new plane has a 175-h.p. engine and its landed cost is said to be \$1000. Another plane is on order.

### Winter Persian Air Service

Persian air service will be continued during this winter. Services which may be formed upon the operations by weather conditions will be temporary, according to operating company's announcement.

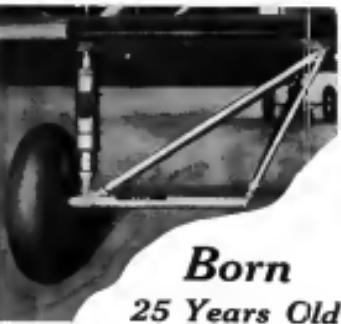
During the third quarter of 1927, the company's plane, carrying four passengers, has flown 810 to capacity on every flight in the weekly service between Tehran and Teheran, Persia.

An additional plane may be added to the Persian service next spring, if so used.

### Rio de Janeiro-Porto Alegre Service

Regular air service between Rio de Janeiro and Porto Alegre, Brazil, was begun recently by the Condor Syndicate.

First flight over the route was made by a 10-passenger plane equipped with motor. On its trial trip it carried four passengers, a crew of five, 1,000 liters of gasoline, 300 liters of grease, and oil and various packages. The distance from Flores da Cunha to Rio de Janeiro was made in 4½ hours.



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the Aviation Industry  
CLEVELAND, OHIO

New York, Cleveland, Detroit, St. Louis, Chicago, Philadelphia  
The Austin Company of California: Los Angeles and San Francisco

when he surveyed the states of Vermont and New Hampshire by air.

Colombia took off last Friday afternoon from Boston and delivered it to Teterboro to Colored Western Airways for the route New York-Cleveland. Major Paul D. F. Billings, manager and chief for the Bock's Airport Corporation, flew the Fairey to New York.

Aviation Pilot Elmer D. Jennings, who flew 999 hours and 16 minutes in 17 months duty at the Naval Reserve Air Station at Squantum, sailed from New York City Dec. 21 for two years duty at the Naval Air Station at Coco Solo, Colonia, Costa Rica.

### Worcester, Mass.

By Henry E. Ford

Interest in aviation continues to grow in this section prompted partly by the establishment of a passenger-carrying service and flying school by the New England Aircraft Corp., of Hartford, Conn., at Whitfield Field, five miles east of Worcester.

The New England Aircraft Corp. recently dedicated the field for the second time with an exhibition of stunt which attracted a crowd of 5,000 people in spite of the fact that the day was cold, blustery and rainy.

The show comprised flights by Harry Spencer, Louis H. G. "Kitty" Barrows, president and vice-president of the company, Capt. H. E. Strohmeier, Lieut. Stewart Chadwick, and a parachute jump by Walter Johnson.

The dedication signified the opening of the field as a passenger-carrying depot and a flying school and the results have been gratifying to Mr. Spencer. The passenger-carrying business has been good especially on Saturday afternoons and Sunday when 2,500 people make visits to the field.

The flying school is progressing rapidly and the young men of Worcester and vicinity are receiving their training. The instruction courses are given by Captain Strohmeier and Lieut. Chadwick, who are also managing the passengers. The students are George Koenig, Fred J. F. Roberts, Horace W. Coffin, J. H. Koenig and A. E. Holmes of Worcester and Daniel Backman of Lowell.

In spite of an early winter, the students have been reporting regularly and, according to Captain Strohmeier, are progressing rapidly. None of the student fliers have done any Scout side flying to warrant their taking examinations for a pilot's license.

M. White Whitfield recently "burned up" his Waco-10 and purchased a new passenger Fairey which will be in doing considerable passenger-carrying.

James F. Whitfield, brother of M. White Whitfield, is flying a Douglas-Dart 10, which weighs 380 lb. James F. is an aerodynamicist who has been the pilot in the air and 20 speed. He flew the plane from Lansing, Mich., via Toledo and Buffalo to Whitfield Field.

Horace Coffin, student Star at Whitfield Field, has been appointed sales representative of the New England Aircraft Corp. The new job will give Coffin an opportunity to fly and selling Waco and Fairey monoplanes.

Horace Coffin is a popular writer at Whitfield Field flying from Hartford twice a week to entertain the mind and soul with Captain Strohmeier and Lieutenant Chadwick.

### Springfield, Mass.

By Charles Weston Gage

A second, public hearing on the proposed municipal airport for Springfield was held by the airport committee of the city council at the municipal building recently. No definite action was taken and there has been some since, it is said, although it was felt that considerable progress was made toward the eventual selection of the most favorable site.

The hearing was arranged to give all proposals due air

port after equal consideration.

Considerable protest was made by the Berkshires Civic club against the choice of an airport outside the city limits. The suggested terms of land bordering Brookline Avenue, P. St. and Wilbraham road, all in this city, as possible sites for development.

Two of the local commercial companies, the Massachusetts Airways and the Springfield Airport company, urged the advantages of their respective fields and stated that they expected to remain where they are now located regardless of where the city desires to hold.

Walter D. Day, president of the Flying Club of Springfield, urged the consideration of the proposed airport from the public's point of view and stressed the advisability of building an airport as soon as possible regardless of the location. He felt that the city would be a natural flying field area and Springfield would be the best possible choice.

John A. Finkard, one of the founders of the Flying Club of Springfield, declared that the airport committee should call in a group of experts to study the situation and recommend the field which appeared to be the best.

The airport committee expects to make a thorough study of the situation and make a recommendation soon.

Loc. Jack Hardling, Lieut. Eric Nelson's place-mate in the Round-the-World Flight, was the guest of the Flying Club of Springfield at a recent dinner at the Colony Club. He spoke briefly on some of the experiences of the flight and agreed to make a return visit to the club this winter.

### Toots Falls, Idaho

An aviation school is being established here. Russell E. Orms, of Newberg, Ind.; James Tate of Kimberly, Idaho, and Jack Phinney, Aren, Idaho, are the organizers.

Mr. Orms is chief pilot and Mr. Tate will be his assistant, while Mr. Phinney is to be general man and manager.

At first the two planes of John Broome, commercial pilot of Ketchum, 80 miles east of Twin Falls, will be used. With these planes Mr. Orms will do a ten-cent course.

The Twin Falls Flying School is already building for a second school. At present the planes used by this school are based at a field 4 miles east of Twin Falls on the Kimberly road. The office of the flying school is located at Ketchum. Six students have now signed up with the school.

### Atlanta, Ga.

By John E. Gorder, Jr.

Colonel Charles E. Dunford, an officer of the Pursuit corps, stationed at Atlanta for the past three and one-half years, has received orders to take command of the Army Pursuit Group at Edwards Field, Mich.

Colonel Dunford, senior pilot of the Army Air Corps by permanent ranking, is primarily responsible for the establishment of Edwards Field, Atlanta's airport.

By chance he came to Atlanta in 1924 after a brilliant career as an aviator at Langley Field, Va. The officer was given the choice of the Atlanta post where the Army wanted an adequate landing field, hill and aviation material unobstructed, or the command of a Colorado post. He chose Atlanta and six years previously at Fort McPherson in Atlanta, Colonel Dunford had fled the city and took the post he had been told would be "hand."

Colonel Dunford received his first flying experience at Kelly Field, Tex., when he served as a line corporal-cadet in the Signal Corps. Later, being transferred to the Air Corps, he was given primary training at Cadetron Field, Tex., and graduated from the advanced school at Kelly Field.

Winning his promotion to the rank of colonel after serving as a private in the Fourth United States volunteers,



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airplanes in flying from Bremerton to McClellan, and a number of operators in the oil fields have been making regular airplane trips. Among them are Bill Dunning and George Bannister, of San Angelo.

### Portland, Ore.

By John W. Anderson

John W. Allen and I. G. "Stop" Remondt of the Bell Air Lines are making a survey of intermediate landing fields in Eastern Oregon, and studying interest in aeronautics. If conditions are right the two will probably start an air service between Portland and Baker, Ore., with stops at principal cities along the way.

The two have just bought a Spad biplane for use in sheet and advertising work. The plane has been used in San Francisco for sky writing.

Virginia Desktop, paper company employee at Coopers Work, has graduated in the Bell Lines air school.

### Fargo, N. D.

All the planes have been put away for the winter to be reactivated, with the exception of one at the Henrich Airport, which is in readiness to be used whenever there is a demand for its services.

Verne L. Roberts, who piloted a Monospar as the safety of the Fango Aeromotor Club in the New York in Spokane National Air Derby, has left Fango for the winter months to accept a position with the Central States Aero Co. of Des Moines, Iowa, who is the manufacturer of the light aeronautical plane. Roberts will return to Fango in the spring to resume his activities at the Henrich Airport.

The Henrich Auto School is conducting a flying school with E. A. Canfield as instructor. A number of pupils are receiving their ground training at present, but the actual flying will not be done until the spring season opens.

C. L. H. Morris, vice president and general manager of the Northwest Airways, operator of the air mail route between Denver, Cheyenne and the Twin Cities, flew to Fango in a plane piloted by "Speed" Holmes.

The purpose of the trip was to study the territory over which they traveled and the Henrich Airport, as well as to confer with the aeronautical experts as to the possibility of extending the air mail service to Fargo and later making it a regular part of this route.

### Buffalo, N. Y.

By Jack O'Rourke

Lester Frank Norton, of the U. S. Army, performed the aerial first of twelve three passenger planes in one day at the Bell Air Airport. The tests were all successful and on Saturday, Dec. 17, 1922, the planes were flown to Mitchell Field, N. Y.

### Beloit, Wis.

Both the South America Legion post and the Beloit Community Service Center are making an effort to get Beloit, or rather by flying. The Standard Oil Company intends to mark the roof of its new warehouse with a standard aviation cross identification sign. Large block letters will be inserted so that the sign will at once be an identification and a direction indicator.

### Kenosha, Wis.

A committee for the purpose of consolidating cities and towns for providing an airport for Kenosha has been appointed by the president of the Kenosha Civic Council. The committee includes Elmer G. Blomquist, who was an air mail service during the war, and brings to the committee a knowledge of the technical things to be considered in the selection of a site for an airport.

### Kalmar, Wis.

A municipal airport at Kalmar village is rapidly nearing completion, and when finished will be known as Britz Field in honor of Amos Britz, research engineer of the Kalmar Company, and well known Wisconsin pilot, who is supervising the work of the field. According to the "Kalmar News," the field will be one of the most modern in the state, comprising an acre of land. A large hangar, 40x60 feet, will be placed on the corner of the acre, and a hangar, 30x60 feet of inspection construction, has been built adjacent to the field and will accommodate several planes, including Mr. Britz's new one, a Waco 10 Express.

### La Crosse, Wis.

Following the action by the members of the La Crosse Flying Club for the removal of the airport at the city, La Crosse was abandoned as an intermediate landing point on the Chicago-Twin City Airways line, according to announcements given in previous officials by the Northwest Airways, Inc.

Although trying for three years, La Crosse is today officially without an aeronautical landing field, but by a vote of 10 to 9 the members favored there over the proposal of the Beloit Land Company to sell as their field of 115 acres for \$1000 plus taxes for the year 1926.

### Pocatello, Idaho

By Robert Blanchard

This town is not alone holding for an air mail stop, when the contemplated new air mail line from East Lake City, Utah, to Great Falls, Mont., is established, but is also planning its airport that all commercial planes can land on the Pocatello Flying Field with the maximum of safety.

The Aviation Committee of the local chamber of commerce is awaiting the arrival of J. F. Washington, of the Aviation Branch, Department of Commerce, who is expected in Pocatello soon. His first approach of the plane for the proposed enlargement and modernizing of the present field, where planes can land, in the second of another field, is expected to be the signal for a release of a lot of aeronautic experts to the town.

The first thing planned to be done is to paint on white the name "Pocatello" in gigantic letters on a large black roof, so all who fly may read.

### Caldwell, Idaho

Inclement weather did not halt operations at the Caldwell air field, where workmen have started the erection of shops and hangars. It is planned to push the contract to completion as rapidly as is consistent.

J. Day, manager of the aeronautics company, which is located here, already has started classes for students of aviation and aeronautics and growing enthusiasm to having a plane over their buildings.

### Battle Creek, Iowa

The landing field used by Commercial Air, Inc., has an area of 50 acres and can be reached from any direction. It has a 40 foot concrete strip in the center, and the field is in the heart of one of the most modern cities in Western Iowa. Five streets lead to the field and it is only two and a half blocks to the post office and two blocks from the railroad station and business district.

The hangar on the field is of heavy sheet steel construction with a rolling door. Gasoline and all services are available, a larger pipe and pump system having been installed.

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size. Being unable to find any space below, they finally set a chance at landing in the desert outside the city, showing their craft with difficulty between two mesquite bushes by plowing through a high wire fence.

A similar survival down to town and from there, the men were rescued to the little coffee as a result fifteen miles out of the city, in time, despite delays and hardships, to save a life.

"We learned later the field had been shifted to the west side of town," said Stargor, "Our experience proves the vital importance of every pilot having an adequate landing field, properly maintained, lighted at night and mapped. Already learned, traps are becoming more and more common between cities, the planes having demonstrated its usefulness during the Mississippi flood, and in a number of single engine planes alone. Many lives will be saved because of the speed with which supplies and medical equipment can be transported from supply point to disaster area."

"Every community should have a landing field and we that it is made 500 feet and paved and soft."

Arduous time for pleasure at getting the series there is true. Lieutenant Borges measured 100 feet but Warren McAvoy, Jr., president of the Arizona Chapter of the National Aeronautic Association, has retaliated a move to have a similar presented Lieutenant Borges and other marred exemplifies there has had and his company.

### To Appoint Air Mechanics

The Office of the Chief of Air Corps is accepting applications for the appointment of air mechanics, a rating authorized by the Air Corps Act of July 2, 1928, for which the necessary funds became available this fall.

These enlisted men, of the lower grades, particularly qualified in the trades required on the Air Corps, have been given an opportunity to take examinations for this rating. The 600 mechanics, first class, authorized for the fiscal year of 1938 are to be taken from the ranks of sergeant and sergeant, 1st and 2nd, and corporal. The 820 remaining of the total of 1225, are to be given to 2nd sergeants, 2nd corporals, 2nd privates first class, and 2nd privates, these being known as air mechanics, second class.

The aftermath of the ratings and the method of selection were prescribed by recent instructions from the War Department.

### Navy Seeks More Pilots

The Department of the Navy has issued the following statement:

To provide for a substantial increase which must be made in the number of flyers in the number of qualified naval aviators, the Navy Department has sent a letter to all ships and stations requesting information concerning the physical fitness for aviation training of all commissioned officers of the active list of the Navy of two or more years' seniority as of July 1, 1938.

In the annual physical examinations of officers, those whose medical condition report are without defects that would interfere with their flying training at Pensacola in the next two years, those in health, will be directed to report for examination for aviation training.

The object of this examination is to determine the physical fitness of officers for qualification as naval aviators and for assignments for training as naval aviators whose names are desired by the Department. No officer will be directed to retirement in aviation unless the officer himself makes written application for it.

There are now 455 naval pilots on duty in the navalized organization of the Navy.

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Terra-Florin (13,000 miles) in 6 days, by Peltier-Drey and Garel (450 hp engine).

Tour of the Eastern Mediterranean (13,750 miles) in 41 hours 40 minutes elapsed time by Peltier-Drey and Gosselin (450 hp engine). Night crossing of South Atlantic, by Bermento de Bories (450 hp geared engine).

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Cross of Mediterranean (6,000 miles) in 6 days by Peltier-Drey and Gosselin (450 hp geared engine).

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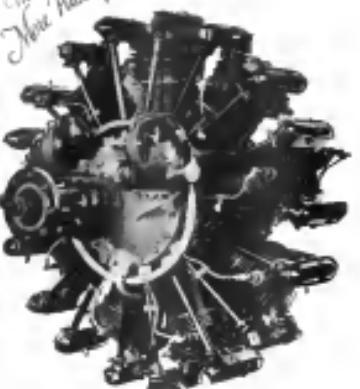
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Three Wasp Triplane Entered Fokker Planes for Western Air Express	58	Passenger Line to be Established Between	508	Vines in New General Manager of the Plycor
Three Western Air Express Fokker F-9s Now Thunderbird Aircraft, Inc., Los Angeles, Contracts for Consolidated Instruments	1372	Pittsburgh and New York	710	Volume of Orders for the Plycor
Three Years of Operation of Oklahoma City Name Agent for Eriksen	1772	Passenger Line Between San Fran-	710	New Capitalization and Expansion
Tidewater Oil Representative Uses Stinson Italian Alce to Study Aeronautics in This Country	100	isco and Seattle, Wash.	710	Van Hoffman Flying School Lets Students Fly
Three Years Now Project Engineer of Keystone Aircraft Corp. Bristol, Pa. George To Begin Operation of New Mail Route Between Albany and Buffalo on June 1	1602	Phillips-Froberg Company to Open Seattle-Bremerton Service	1222	Wings for Learning, Construction Hours
Three Weeks of Experimentation in Making Weather to Conduct Experiments in Making Weather Observations from Planes	204	Progress of Civil Aviation in Australia, by J. C. Gilbert-Lodge	1010	Woolen Aircraft Corp. Completes Monoplane
Three Years of the Wright Engines with Special G. E. Superchargers	1152	Project in San Francisco Passenger	145	Called American Moth
To Establish Radio Communication Stations on Salt Lakes and Line	204	Regular Portland Spokane Service Being Started	95	W
To Hold Air Meet June 26-27 as Formal Dedication of Airport at Endicott, N. Y.	1462	Stout Air Service Will Operate Detroit-Chicago Passenger Line	981	Waco Airplanes Owned by Dennison Airport Club, Boston, Mass.
To Hold 11th Annual Aircraft Show in Detroit	334	Schedule Tourist Air Cruise of Europe to Los Angeles	895	Waco Plane Dealership in Ocala-Gainesville District of Florida Taken by Joe Borden
To Hold 11th Annual Aeronautic Exhibit in Paris June 29-July 15	845	Seattle Tourist Air Cruise of Europe to Los Angeles	1390	Wardens of the Americas Discuss 1928 Plans
To Hold Annual International Aeronautical Exposition at Berlin Oct. 7 to 28	1216	Portland-Passenger Line Will be	637	in Meeting at Troy
To Hold Northwest Aircraft Show at St. Paul	909	Inaugurated Next Month	145	Wallace, Tourplane, The
To Hold Northwest Air Show at St. Paul April 20 to 25	982	Stinson Scenic Air Tours Company Formed	145	Wallace, Tom Sales Position with Fairchild Aircraft Co.
To Hold Travel Transportation, Inc., Formed for Training and Service	526	For Trips Over Detroit and Air Taxi Work	1696	Warner "Scarab" The
To Open Ground School for Union of Massachusetts Airplane Groups	718	Stout Air Service, Detroit, Inaugurates Airline	1684	Ward, at Canyon Field
To Place 15 More Mail Planes in Western Mail Route Service	585	Stout Air Service Will Operate Detroit-Chicago Passenger Line	981	Wasps Engineed All Metal Monoplane Being
To Place 15 More Mail Planes Weekly at New Lockheed Company Plant	894	Stout Air Service Co. Beginning Regular Dallas to Houston and San Antonio Service	1464	Wasps Engine by Cincinnati Company
To Save Entire Day on Schedule of Transportation of All Kinds	50	To Use 10 Passenger Bach Planes in New Air Service on West Coast	1390	Watson, G. Head, The
To Secure Greater Efficiency	451	Training Planes Used on Travel Air Field, Wichita, Kan.	1214	Watson, G. Head, The
Aero Clubs Merge	107	Two Cities-Rochester Ford Plane Service	1772	Watson, G. Head, The
To Teach Aviation Fundamentals in Remington Airplane Course	107	Two Cities Los Angeles to Offer Amphibian Service	1772	Watson, G. Head, The
To Test Four Fokker Air-Cooled "Dayton" Biplanes in International F-17 Plane	1848	Between Los Angeles and Catalina Island	1306	Watson, G. Head, The
To Use 10 Passengers on Each Planes in New Air Service on West Coast	395	Announces Passenger and Express Charges	1772	Watson, G. Head, The
Travel Commissioners, Day Reports Airplane Marketing	448	Westchester Airways, Inc., Establishes Pass-Away Service Branch at Toledo, O.	1373	Wayne Air Service Inc., of Detroit, Mich.,
Trans-Experts to Study Foreign Services as Step in Forming the T. A. T. Air-Kail Line	1773	Monoplane Type 6000	1213	Named Distributor of Balsilla Monoplanes
TRANS-PACIFIC AIR MAIL California Changes Rates on Three Passenger Routes	842	Travel Air Mfg. Co. Now Producing Biplane	784	Weather Bureau for Pacific Coast Aero Report
Air Service Corp. of Oklahoma City Formed	1000	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Weather Reporting Increased on Two Western Airways
Three Passengers Now in Passenger Work	1463	Travel Air Field, Wichita, Kan.	1214	Western Airways, Inc., Establishes Pass-Away Service Branch at Toledo, Ohio
Air Transport Service is Offered by Kansas City Line	1220	Tri City Flight Federation Used on Travel Air Field, Wichita, Kan.	1214	West Coast Air Line Announces Passenger Service
Airway Passenger Stations	190	Tri City Flight Federation in Fokker Plane Built	333	West Coast Correspondent Flies to All-American Show in Detroit
by Richard V. Murison	190	for Duration Attempt	333	Western Judge Rules Low Flying Above Homes
American Air Transport to Conduct Air Passenger and Freight Service in Texas	1775	Travel Y. Company is Organized to Fly for Flying, Plane Sales and Airport Work	1688	Western Judge Conducting Spray Tests on the Micarco Propeller
Australian Company Flies Half Million Miles Without Accidents	106	Turnball Variable Pitch Propeller, the New Swallow Airplane Co. J. H. Twenty-five Members Organize Royal Oak, Mich., Flying Club	144	Westerner Publishes Booklet on Contributions to Aeronautics
Average and Random Companies Combine to Offer Coast-to-Coast Air-Rail Service	1526	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Westland Widgeon III, The
Baltimore Travel Bureau Offers Transcontinental Flight Service	202	Travel Field, Wichita, Kan.	1214	Wheeler, S. A. Red, The by Dropping 4,100 ft. Before Take Off
Baltimore Air Transport Co. Has Fine Record Over First Seven Months	528	Tri City Flight Federation in Fokker Plane Built	333	White to Make Further Flight Attempts with New Improved Orsiatograph, George R. 1301
Braffit Air transportation Taxi Co. of Oklahoma City to Start Line	1775	for Duration Attempt	333	White, G. R. Orsiatograph Company to
Chicago and Gulf Airways Plans Chicago-Mobile Passenger Line	1228	Travel Y. Company is Organized to Fly for Flying, Plane Sales and Airport Work	1688	Begin Production of Biplanes
Commercial Airplane Service is Planned by Boeing Airplane Co.	394	Turnball Variable Pitch Propeller, the New Swallow Airplane Co. J. H. Twenty-five Members Organize Royal Oak, Mich., Flying Club	144	Wies and Solomon to Fly South to Attempt World Endurance Record
Colonial Air Transport Resumes Passenger Service on Its New York-Boston Mail Line	1846	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Wies, B. C. Eastern Agent for Stearman
Cook & Son to Use Planes on New Cruise of World in 1929, The	1010	Travel Field, Wichita, Kan.	1214	Whale, O. S. in Texas Territory
Eastern Air Transport, Midway Express Air Service Over Three Airways	981	Travel Y. Company is Organized to Fly for Flying, Plane Sales and Airport Work	1688	Wilkins and Elision Fly Vane Plane Across Polar Seas to Spitsbergen
First Delivery of Bach Planes for West Coast This Month	144	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Wilkins, T. Captain "Vega" on New Arctic Expedition
Inaugurate Two Sightseeing Air Routes in Los Angeles	158	Travel Field, Wichita, Kan.	1214	Williams Makes Thirteen Outside Loops in Test
Insauguration of Los Angeles-San Francisco Line with Fokker F-10 Planes Announced	1688	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Williams, Monogram, The
Industrial Survey Planned to Increase Air Service in Los Angeles City	28	Travel Field, Wichita, Kan.	1214	Wing Analysis, by Prof. Alexander Klemin and George F. Fitten
Inter American Air Lines, by Griswold E. Haynes	510	Travel Y. Company is Organized to Fly for Flying, Plane Sales and Airport Work	1688	Wing, Prof. Alexander Klemin and George F. Fitten
Key to Success Passenger Line Reported to be Highly Profitable	1222	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Winneshiek Flying Club Recently Formed by LaCrosse, Wisc., Men
Lima, Peru, to Para, Brazil	577	Travel Field, Wichita, Kan.	1214	Wing, C. A. Airplane, The
Los Angeles-San Antonio Passenger Line to be in Operation	1155	Travel Y. Company is Organized to Fly for Flying, Plane Sales and Airport Work	1688	Wing, C. A. Airplane, The
Madfus Company Begins Daily Ford Plane Service from San Diego to Los Angeles	1312	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Wing, C. A. Airplane, The
Midwest Airlines to Be Organized Daily Mississippis to Farge Passenger Service	1774	Travel Field, Wichita, Kan.	1214	Wing, Cyclone Engine, The
N. A. T. Begins Passenger Service Between Kansas City and Miami	439	Travel Y. Company is Organized to Fly for Flying, Plane Sales and Airport Work	1688	Wing, Cyclone Engine, The
N. A. T. to Establish Chicago-New York Passenger Service Within Eight Months	1770	Travel Airways Company of Dallas, Texas, Makes Six Airplane Sales in Fast Time	1460	Wing, Cyclone Engine, The